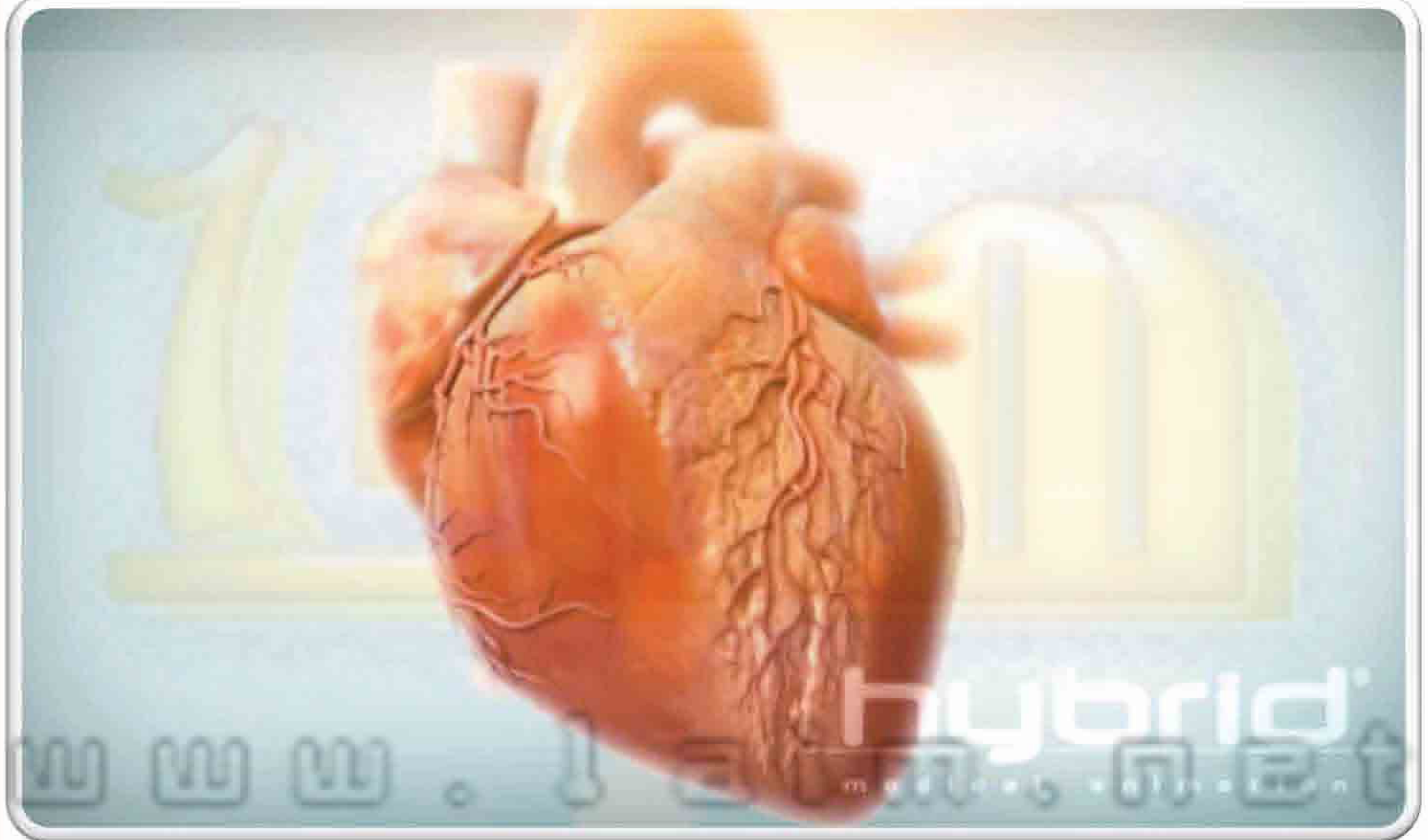


cardiology



2 0 0 9 - 2 0 1 0

Index:

- **HEART FAILURE.** (SEE THE book)
- **HYPERTENSION.**
- **ANGINA & MYOCARDIAL INFARCTION.**
- **TREATMENT OF HTN.**
- **VALVULAR HD.** (STENOSIS / INCOMPETENCE)
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- **REST of CARDIOLOGY:**
 - 1) **PERICARDITIS.**
 - 2) **CARDIOMYOPATHY.**
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 - 4) **MYOCARDITIS.**
 - 5) **LA MYXOMA & MV PROLAPSE.**
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HYPERTENSION

"PERSISTENT $\uparrow\uparrow$ BP > NORMAL ON 3 diff. OCCASIONS UNDER MENTAL & physical REST"

ISOLATED SYSTOLIC HTN

(> 140 / < 90)

CAUSES

- A.I. -PDA
- Complete HB.
- Coarctation of Aorta.
- Atherosclerosis

Complications: if high pulse pr. → Cerebro Vascular Stroke.

TREATMENT

- 1) of the cause.
- 2) if $\uparrow\uparrow\uparrow$ SBP → Anti-hypertensive.

DIASTOLIC HTN

(> 90)

| | 1 ^{RY} ESSENTIAL | 2 ^{RY} HTN |
|----------|---------------------------|--------------------------------------|
| • AGE | 35 - 55 | < 35 till 55 yrs. |
| • CAUSE | Not apparent | +ve esp. Renal /Endocrinal |
| • FH | +ve | - ve |
| • COURSE | Slowly prog. → benign | Rapidly prog. → malig. esp. in renal |

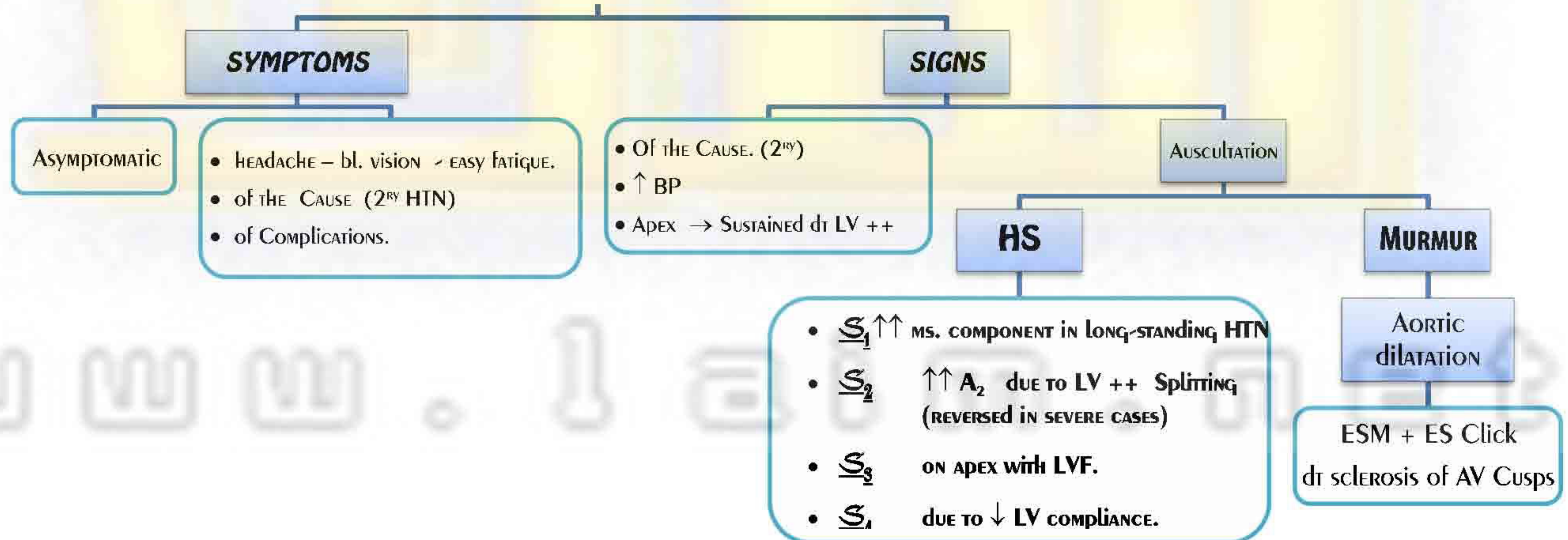
CAUSES of 2^{RY} HTN

| | |
|-----------------|--|
| 1) RENAL | RAS / GN / ARF & CRF. |
| 2) ENDOCRINAL | <ul style="list-style-type: none"> • ACROMEGALY - Thyrotoxicosis → systolic HTN • Cushing's → Na + H₂O Retention + Sensitize T. to CA • Conn's disease → ↑ Aldosterone. • PHEOCHROMOCYTOMA → ↑CA. |
| 3) NEUROLOGICAL | ↑ ICT → reflex $\uparrow\uparrow$ in BL. pressure. (Cushing Reflex) |
| 4) CVS | COARCTATION OF AORTA. |
| 5) PREGNANCY | PREECLAMPSIA. |
| 6) Blood | polycythemia → hyperviscosity → ↑BP. |
| 7) DRUGS | CORTISONE + OCP + NSAID → Na & H ₂ O RETENTION Ephedrine, Erythropoietin and Cyclosporine. |

RECENT STAGING OF HTN

| CATEGORY | Systolic | Diastolic |
|------------------------------|-----------|-----------|
| • NORMAL: | < 130 | <85 |
| • High NORMAL | 130-139 | 85 -89 |
| hypertension | | |
| • STAGE I (mild) | 140-159 1 | 90-99 |
| • STAGE II (MODERATE) | 160-179 | 100-109 |
| • STAGE III (SEVERE) | > 180 | > 110 |

Cl. /P of HTN



MALIGNANT HTN

"RAPIDLY PROG. HTN WITH EARLY COMPLICATIONS DUE TO FIBROID NECROSIS OF VASCULAR WALL"

(Cerebral hge - RF - HF)

CL/P

• **DBP > 130.**

- **Pallor** → *vasospasm* + *microangiopathic H.A*
- **Fundus** → *macular star* + **papilloedema**

COMPLICATIONS = ORGAN FAILURE

- 1) **HEART** → HF - ISHD - Diastolic dysfunction - Dissecting Aortic Aneurysm.
- 2) **NEURO** → Stroke (cerebral hge) - Lacunar infarction
- 3) **KIDNEY** → CRF in benign essential HTN - ARF in malignant HTN.
- 4) **EYE** → Retinopathy (silver wiring / Ar-V nipping / Hge - exudates / papilloedema)
- 5) **DRUGS S/E.**

INVESTIGATIONS

- 1) **ECG & X-RAY** → *LV⁺⁺ (long standing HTN)*
- 2) **FUNDUS EXAM.** → *acc. To the stage.*
- 3) **CAUSE:**
 - *↑ Cortisol - ↑ Thyroxin.*
 - *VMA, - plasma rennin*
 - **Na - K (Hypokalemic hypertension)**
- 4) **KFTs + RENAL Angiography.**

TREATMENT

- 1) **REST** → *during exacerbation rest in bed*
- 2) **STABLE CASES** → *moderation of life + avoid stress.*
- 3) **DIET** → *↓ Na Fat CHO + ↑ K*
- 4) **↓ WT** → *true fall in BP in over-wt. pt.*
- 5) **DRUG THERAPY**

DRUG THERAPY OF HYPERTENSION

DD OF HYPOKALEMIC HTN:

- 1) Conn's \$ → ↑ Aldosterone → ↑ BP & K excretion.
- 2) Cushing \$ → ↑ Cortisone → ↑ BP & K excretion.
- 3) RAS → ↑ Renin → ↑ ANG-II → ↑ Aldosterone.
- 4) Diuretics in hypertension.

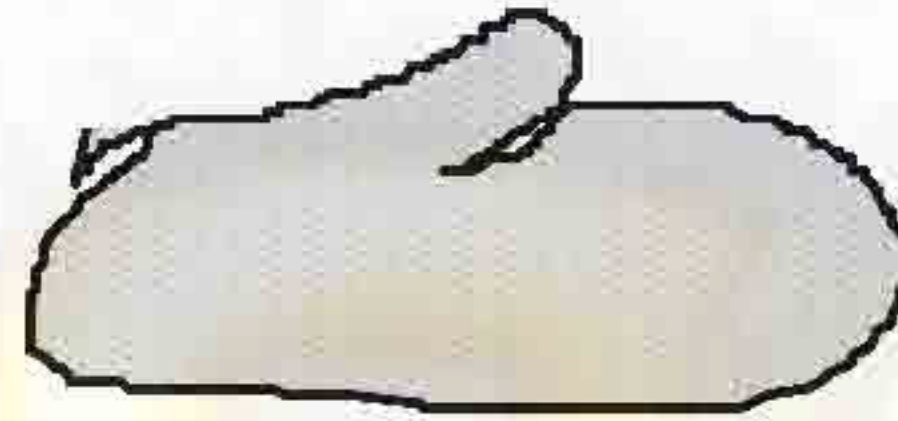
SPECIAL PROBLEMS IN HTN

| HTN + ... | AVOID | GIVE |
|---|---|--|
| 1) HF | <ul style="list-style-type: none">• $\beta\beta$ in (large doses so start by low dose & \uparrow gradually).• CCB .(Verapamil) | VD + Diuretics. (ACE-I or ARBs) (NOT in PVD) |
| 2) COPD or BA | <ul style="list-style-type: none">• $\beta\beta$(NON-selective) \rightarrow BS. | |
| 3) DM | <ul style="list-style-type: none">• $\beta\beta \rightarrow$ mask S & S of hypo-glycemia. \rightarrow hyper-lipidemia. | |
| 4) PVD (Scleroderma / SLE) | <ul style="list-style-type: none">• $\beta\beta \rightarrow$ block $\beta_2 \rightarrow$ UN-opposed $\alpha \rightarrow$ VC. | |
| (1-4) Avoid $\beta\beta$ | | |
| 5) ISHD | <u>Avoid Tachycardia:</u> 1) hydralazine. 2) Nifedipine ALONE \rightarrow Add $\beta\beta$. | 1) $\beta\beta$ OR CCB. 2) ACE-I. |
| 6) PREGNANCY (TIGHT CONTROL IS REQUIRED) | 1) $\beta\beta$ (propranolol) \rightarrow fetal bradycardia. 2) Diuretics \rightarrow \downarrow placental bl. Flow. 3) ACE-I \rightarrow TERATOGENIC. | 1) α -methyl dopa. 2) Hydralazine. 3) Atenolol, Labetolol 4) CCB. |
| 7) RENAL D. | | 1) ACE-I (MONITOR K & s. Cr) 2) Lasix NOT Thiazides to \uparrow GFR 3) Hydralazine. 4) $\beta\beta$ - CCB. |
| 8) MALIG. HTN | <u>Avoid rapid \downarrow BP</u> TO AVOID \downarrow T. perfusion & altered AUTO-regulatory mech. \rightarrow Cerebral damage. | <u>By infusion THEN ORAL if Stable:</u> 1) NATRATES. "of choice" 2) Na Nitro-prusside. 3) Hydralazine. 4) Labetolol. |
| 9) HTN in Elderly | <ul style="list-style-type: none">• $\beta\beta \rightarrow$ VC.• Thiazides \rightarrow \downarrow Na / K | 1. ACE-I. 2. CCB. (Verapamil – Diltiazam) |
| 10) DIASTOLIC DYSE. | | $\beta\beta$ + CCB. |
| 11) ISOLATED (S) HTN | | Thiazides |
| 12) UNI-LAT. RAS | | ACE-I "of choice but # in Bilat RAS. |

HYPERTENSIVE ENCEPHALOPATHY

"sudden marked \uparrow BP \rightarrow gush of blood to brain \rightarrow diffuse Brain edema \rightarrow coma without lat signs"

hypertensive encephalopathy



Diffuse edema by CT scan
(Both sides are affected)



No lateralizing signs



Rapid control of BP is required.

واحد ضغطه عالي
و اترمي في الارض فجأة

Stroke



Focal lesion
eg. Cerebral HGE /
lacunar infarction
(ONE side is affected)



+ve lateralizing signs



Compensatory \uparrow BP
so rapid \Downarrow of BP is harmful

Treatment of H. Encephalopathy:

- 1) Anti hypert Infusion \rightarrow hydralazine & frusemide + Nitrate + Na Nitroprusside. (Infusion v. slowly & monitoring)
 - 2) Convulsions \rightarrow Diazepam IV
 - 3) Brain edema \rightarrow Frusemide Infusion. (# Mannitol to Avoid initial hyper-volemia)
- Refractory HTN M/C = non compliance + inadequate th. + un-known cause (RAS)

Surgically curable HTN ARE 2^{RY} HTN

- 1) RAS - Cushing \$
- 2) Acromegally - PHEOCHROMOCYTOMA.
- 3) COARCTATION of AORTA.

INVESTIGATIONS

| | | | | | | | | | | | | | | | | | |
|---|---|--|---------------------------------|-----------------|------------|---------------------------------|-------------|-------|---------|---------|----------|--------|----------|---------|--------|-----------|-----------|
| 1) ECG | <div>1) $\downarrow\downarrow$ S-T SEGMENT.</div> <div>2) T- WAVE INVERSION.</div> <div>"If Resting ECG is normal \Rightarrow STRESS TEST (Treadmill test) OR Dobutamine in pt. unable to do exertion"</div> | <div>ECG changes after 6 hrs.</div> <div><div>TRANS-MURAL</div><div><ul style="list-style-type: none">$\uparrow\uparrow$ S-T SEGMENTPATH. QINVERTED T</div><div>SUB-ENDOCARDIAL</div><div><ul style="list-style-type: none">$\downarrow\downarrow$ S -T SEG.NON-Q INFARCTIONINVERTED T</div></div> | | | | | | | | | | | | | | | |
| 2) Echo or Dobutamine Echo | <div>a) EJECTION FRACTION.</div> <div>b) VENTRICULAR DAMAGE.</div> | <div>a) EJECTION FRACTION. (PROGNOSTIC)</div> <div>b) HEART LESION.</div> | | | | | | | | | | | | | | | |
| 3) CARDIAC SCAN | <ul style="list-style-type: none">REFLECTS CORONARY PERFUSION. (THALLIUM + EXERCISE \rightarrow \uparrowACCURACY) | <ul style="list-style-type: none"><u>XRAY</u> PULM EDEMA | | | | | | | | | | | | | | | |
| 4) TLC / ESR /CRP / CPK | <ul style="list-style-type: none">NORMAL / NO TISSUE DAMAGE. | <ul style="list-style-type: none">$\uparrow\uparrow$ DT TISSUE DAMAGE. | | | | | | | | | | | | | | | |
| 5) CORONARY ANGIOGRAM (Diagnostic / Therapeutic) | <div>Indications of Angiography:</div> <div><div>1) ANGINA REFRACTORY TO MEDICAL TTT.</div><div>2) +VE STRESS TEST.</div><div>3) UNSTABLE ANGINA.</div><div>4) UNEXPLAINED SIGNIFICANT CHEST PAIN.</div><div>5) POST INFARCTION ANGINA.</div></div> | <table><tr><td></td><td>C K-MB fraction</td><td>AST (SGOT)</td><td>Cardiac Troponins (v. specific)</td><td>Mb (Recent)</td></tr><tr><td>ONSET</td><td>4-6 HRS</td><td>12 HRS.</td><td>4-6 HRS.</td><td>2 HRS.</td></tr><tr><td>DURATION</td><td>2 DAYS.</td><td>3 DAYS</td><td>7-14 DAYS</td><td>24 HRS.?! </td></tr></table> | | C K-MB fraction | AST (SGOT) | Cardiac Troponins (v. specific) | Mb (Recent) | ONSET | 4-6 HRS | 12 HRS. | 4-6 HRS. | 2 HRS. | DURATION | 2 DAYS. | 3 DAYS | 7-14 DAYS | 24 HRS.?! |
| | C K-MB fraction | AST (SGOT) | Cardiac Troponins (v. specific) | Mb (Recent) | | | | | | | | | | | | | |
| ONSET | 4-6 HRS | 12 HRS. | 4-6 HRS. | 2 HRS. | | | | | | | | | | | | | |
| DURATION | 2 DAYS. | 3 DAYS | 7-14 DAYS | 24 HRS.?! | | | | | | | | | | | | | |
| 6) Lipid profile s. homocysteine. BS. | | | | | | | | | | | | | | | | | |

RF FOR ISHD = FOR CORONARY ATHEROSCLEROSIS

- 1) AGE > 40 . (if young age \rightarrow Obesity Smoking Stress)
- 2) SEX $\text{♂} > \text{♀}$
- 3) +VE FH.
- 4) STRESS.

- 5) **Diet:** polyunsaturated fatty acids.
 \downarrow Anti-oxidants.
 \downarrow folate and Vit B₁₂ \rightarrow \uparrow homocysteine.
- 6) DM \rightarrow hyper-insulinism \rightarrow Atherogenic \rightarrow hyper-tension.
- 7) hyper-lipidemia \rightarrow \uparrow LDL.
- 8) **RECENT ASS.** \rightarrow \uparrow s. homocysteine \uparrow fibrinogen. \uparrow CRP (b. pylori) / Chlamydia pneumoniae.

CLINICAL TYPES OF ANGINA

| | STABLE | UNSTABLE | PRINZMETAL |
|--------------|--|---|--|
| etiology | stable atheroma in coronaries. | complicated athermanous plaque. | coronary spasm in young age. |
| RF | ✓ | ✓ | ✗ |
| ccc. of pain | <ul style="list-style-type: none"> Mild. short duration. ↑e exertion ↓e rest, nitrates. | <ul style="list-style-type: none"> Severe & at rest. prolonged. - Frequent ↑e exertion ... doesn't ↓e rest & nitrates. | <ul style="list-style-type: none"> Not related to exertion. |
| ECG | ↓↓ S-T segment <u>If Resting ECG is normal</u> ⇒ stress test (treadmill test). | ↓↓ S-T segment | <div> <div>DIAGNOSIS IN CCU</div> <div>PROVOCATIVE TEST "IV ERGONOVINE OR A.Ch"</div> <div> <div>NORMAL PERSON</div> <div>NO EFFECT</div> </div> <div> <div>VASO-SPASTIC ANGINA</div> <div>CHEST PAIN + ↑↑ S-T "AS MI BUT NO PATH.Q"</div> </div> </div> |
| Angio-graphy | stable atheromatous plaque CONTRAST NEPHROPATHY dt dye esp. in DM | atheromatous plaque ± coronary spasm | |

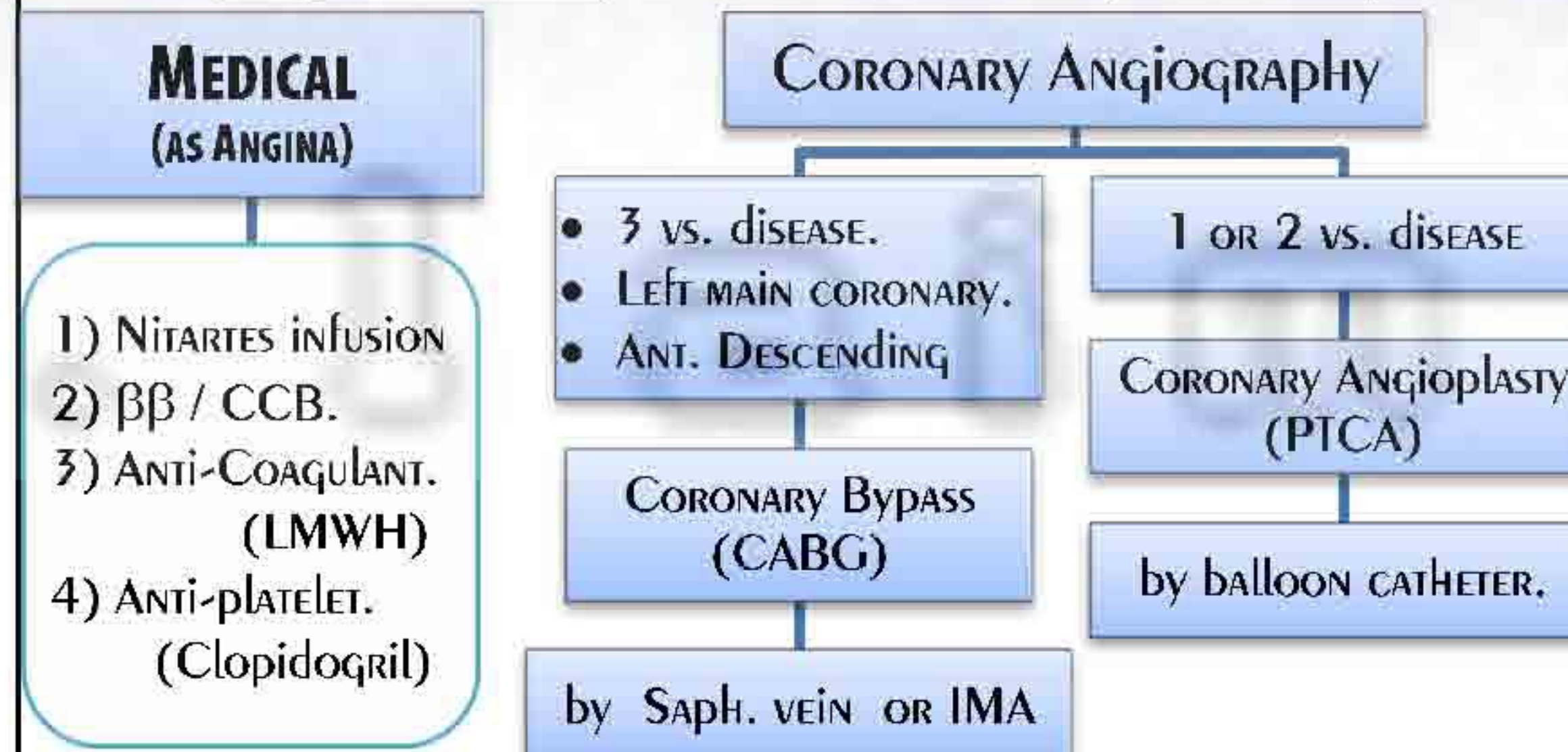
TREATMENT

➤ MEDICAL TTT. (IN LOW RISK)

- 1) $\beta\beta$ + CCB. (to Avoid ↑ HR)
- 2) NITRATES. (only if chest pain)
- 3) Anti-platelets.

➤ SURGERY: (high risk = CORONARY ANGIOGRAPHY)

hospitalization TO EXCLUDE INFARCTION (BY ENZYMES).



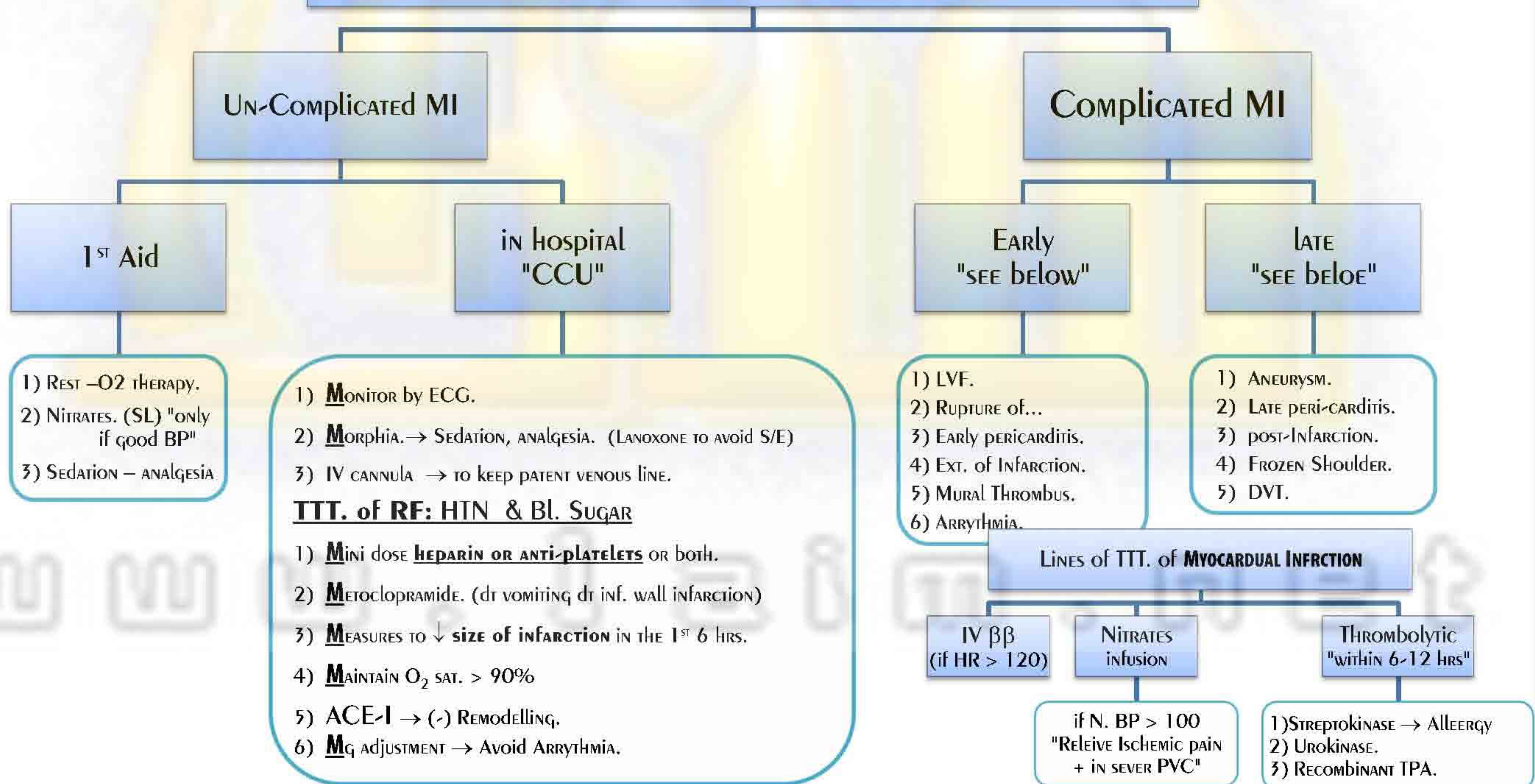
1) CCB OR NITRATES.

- 2) $\beta\beta$ ARE # to avoid coronary spasm dt un-opposed α_1 Rs.

Important Terms:

- **Decubitus Angina** → occurs on lying down...in LVE.
- **Nocturnal Angina** → vivid dreams → wake up the pt. from sleep.
- **Cardiac \$ X** → Angina + (+ve) exercise test + Normal angiography. (due to spasm in coronary μ -circulation)
- **Acute Coronary \$** → Unstable Angina or Myocardial infarction.

TREATMENT of MYOCARDIAL INFARCTION



TREATMENT OF COMPLICATED MI

| EARLY COMPLICATIONS | | | LATE COMPLICATIONS | | |
|----------------------------|---|--|---|---|--|
| LESION | CAUSE | TTT. | LESION | CAUSE | TTT. |
| 1) LVF = HF | EXTENSIVE INFARCTION | 4 Ds: 1) Dopamine / Dob. 2) Diuretics. 3) Digitalis. 4) Dilators. | ANEURYSM + REMODELING (6 wks post-infarction) | HEALED INFARCTION → WEAK SCAR ⇒ ANEURYSM → THROMBOSIS ARRHYTHMIA RUPTURE. persistent ↑↑ S-T > 2wks. | 1) Anti-coagulant. 2) Anti-arrhythmic. 3) Aneurysmectomy. |
| 2) Rupture of: | <ul style="list-style-type: none"> papillary ms ⇒ ACUTE MI ⇒ PE IVS ⇒ ACUTE VSD | ✓ + VR when stabilized. ✓ + SURGERY when stabilized | LATE PERICARDITIS (Dressler's \$) | DAMAGED PERI & MYOCARDIAL CELLS escape to bl ⇒ ⊕ IR ⇒ Auto-Ab against pericardium. | STERIODS. (# heparin → haemopericardium) |
| 3) Early PERICARDITIS | <ul style="list-style-type: none"> Chest pain → NO response to Nitrates. pericardial Rub. | NSAID. (# heparin → haemopericardium) | POST INFARCTION ANGINA Or 2^{RY} PREVENTION of MI | | 1) Avoid RF. 2) Nitrates. 3) BB. 4) ACE-I. 5) CORONARY Angiography for REvascularization. |
| 4) EXTENSION of INFARCTION | ↑↑ PAIN AFTER INITIAL STABILIZATION (↑ MB "NEW MARKER" WITHIN 2 HRS) | | FROZEN SHOULDER | | Physiotherapy. |
| 5) MURAL THROMBUS | DT ROUGH SURFACE OF INFRACTED AREA ⇒ THROMBUS ⇒ EMBOLI | Anti-coagulant | DVT → Pulm. Embolism. | | |
| 6) ARRHYTHMIA | <ul style="list-style-type: none"> V. EXTRASYSTOLE. V. TACH → VF AF - HB | | | | |

Drug Therapy in Angina

DURING THE ATTACK

- 1) REST + O₂ therapy.
- 2) NITRATES. (SL) "only if chest pain"
- 3) RE-ASSURANCE AFTER EXAM.

INBETWEEN THE ATTACK

- 1) Diet: ↓ CHO ↓ FAT ↓ Salt.
- 2) Smoking + Modify life style.
- 3) of RF → DM / HTN / hyper-lipidemia.
- 4) Drug Therapy. (see below)

DRUG THERAPY OF ANGINA

| ® | NITRATES | β-blockers | DHP | | NON-DHP | | |
|---|--|---|--|--|--|---|--------------------------|
| | | | Nifedipine Addal = pure VD | | Deliazam Deliazam | Verapamil Isopin | |
| Mech. | VENO-DILATORS → ↓ VR (↓ Work of the heart & ↑ coronary VD?!) used During the Attack to relief the Chest pain | 1) (-VE) ino-tropic → ↓↓ O2 consumption. | | VD | +++ | ++ | + |
| | | 2) (-VE) chrono-tropic → ↑↑ CORONARY filling. | | (-VE) Ino & Chrono. | x | ++ | +++ (Anti-arrhythmic) |
| USES | 1) MYOCARDIAL INFARCTION. (if chest pain) 2) Oes. Spasm & Acalaxia. 3) PVC. 4) Biliary colic. 5) h. ENCEPHALOPATHY. | CVS USES (NOT Indral) | NON CVS USES (propranolol = Indral) | 1) H. ENCEPHALOPATHY. 2) PVD. NB: 1) Nimodipine. "in sub-arachnoid hge dt reflex Cerebral VC." 2) Cinnarzin in TIA. | | 1) SV Arrhythmia. 2) HOCM. 3) Angina (EVEN VASO-SPASTIC) | |
| | | <ul style="list-style-type: none">HTNAnginaArrhythmiaCyanotic spillsMV prolapse.HF (start low d. then ↑ gradually) | <div><div>30-60 mg</div><div>60-120 mg</div></div> <div>Glaucoma. Thyrotoxicosis.. Fine Tremors. (↓T4 → T3) Parkinsonism. PH. (sphincteric VC) Migraine. (cross BBB)</div> | | | | |
| S/E | <ul style="list-style-type: none">Transient Headache.Hypotension esp. e other VD.(so take in bed)Tolerance on cb. use. | Bradycardia upto HB. • BS (if non-s) HF. • Sudden stoppage → angina Depression. • Fatigue. Night mares. "indral" • Impotence. | | 1) Reflex ↑HR ... Acute ISHD. (so Add ββ) 2) Hypo-tension. 3) Headache. "transient" 4) LL edema → Diuretics. | | 1) HF except Amlodipen. "slow & long acting" → no marked ↑HR... protect the brt" 2) HB. 3) Constipation Esp. "Verapamil" | |
| | | | | | | | |
| ROUTES of NITRATES: | | | NON selective | | SELECTIVE | | |
| 1) SL / Spray → Gylceryl Tri-NATRATE ...relieve attack with in 5 mins. ± Repeated. | | | <ul style="list-style-type: none">Propranolol (Indral)Nadolol. (COR-GARD)Sotalol (β-CORE) | | <ul style="list-style-type: none">Atenolol (TENORMIN)Bisoprolol. (CONCOR) | | |
| 2) Oral → DiNATRA, "Effox" 20 mg TDS. (Iso-sorbide MONO-NITRATE) | | | | | | | |
| 3) Inhalation → Amyl NITRATE. | | | | | | | |
| 4) Ointment → AT NIGHT. | | | | | | | |
| 5) IV → IN UNSTABLE ANGINA & MI. | | | | | | | |
| 6) TD patches → LONG ACTING. | | | | | | | |
| # E Sildenafil (VIAGRA) in pt. taking nitrates. | | | | | | | |
| | | | Lipophilic | | Hydrophilic | | |
| | | | <ul style="list-style-type: none">CROSS BBB. | | <ul style="list-style-type: none">CAN'T CROSS BBB. | | |
| | | | <ul style="list-style-type: none">Hepatic | | <ul style="list-style-type: none">RENAL | | |
| | | | <ul style="list-style-type: none">SHORT ½ life. | | <ul style="list-style-type: none">LONG ½ life. | | |
| | | | <ul style="list-style-type: none">Propranolol | | <ul style="list-style-type: none">Atenolol / Nadolol. | | |

| DRUGS | | USE | SIDE EFFECTS |
|-------|--|-----|--------------|
|-------|--|-----|--------------|

1) Diuretics

| | | | |
|---|--|---|---|
| a) Thiazide (25-50 mg) | Moduretic | | 1-hypokalemia |
| b) Indapamide (VD + Thiazide) | (Thiazide + Amiloride) Aldactazide | 1-Hypertension + HF 2-Hypertension + DM | Add (Spironolactone or Amiloride) |
| c) Furesamide | Lasix Lasilactone | لا يعطى الا ف ظروف معينة: • H encephalopathy • H+ Renal D. (\downarrow GFR) • \downarrow GFR < 25 ml. / min | 1-hypokalemia .. 2-hypovolemia Avoid use for long time |
| d) Spironolactone | Aldactone | 1-Conn's S 2-with other diuretics 3-Hypertension + HF | 1-hyperkalemia Monitor K level. 2-gynaecomastia Use Amiloride or Triametrine |

NB: AVOID all diuretics in pregnancy as they \downarrow placental blood flow.

2) β Blockers

| | | | |
|-----------------------|-------------------------------------|--------------------------------------|--|
| 1- Propranolol | Indral. "v. short acting" | 1- H + IHD 2- H + Diastolic dysf. | 1) BS \Rightarrow Avoid in BA 2) VC of peripheral vs \Rightarrow Avoid in PVD 3) fetal bradycardia \Rightarrow Avoid in pregnancy 4) mask hypoglycemia \Rightarrow Avoid in DM 5) (-ve) ino & chrono Use low dose in HF |
|-----------------------|-------------------------------------|--------------------------------------|--|

2-**Carvidolol**
(VD \rightarrow TIT. of PVD)

Dilatrend

3-**Atenolol**

Tenormin

4-**Bisoprolol**

Concor

4 & 5

NB: Carvidolol is a VD so used in PVD

3) α Blockers

| | | | |
|---------------------|------------------|--|---|
| a) Prazosin | Minipress | 1- PVD | 1-1 st dose hypotension \Rightarrow Start low dose & on going to bed. 2-Tachyphylaxis. |
| b) Doxazosin | Cardura | H + Senile prostate. | |
| c) Labetolol | | 1) Pheocromo-cytoma. 2) H + pregnancy | |

DRUGS

USE

SIDE EFFECTS

4) CENTRALLY ACTING DRUGS

| | | | |
|-------------------------|------------|-----------------------------------|---|
| 1) α Methyl Dopa | Aldomet | H+ Pregnancy Refractory HTN. | 1) depression <u>Add</u> antidepressants 2) extra-pyramidal manifest. 3) Auto-immune hepatitis & AIHA |
| 2) Clonidine | Catapress | 1-H 2- post menopausal flushes | 1) Na & water retention .. <u>Add</u> diuretics 2) rebound HTN... <u>Gradual</u> withdrawal |
| 3) Reserpine | Brinerdine | HAS NO ROLE IN RECENT MEDICINE | (1 & 2) as methyl dopa + nasal congestion |

5) VASO-dilators

A. ARTERIAL VD

| | | | |
|---|------------|--|--|
| 1) Hydralazine | Apresoline | 1) H encephalopathy 2) H + Pregnancy. | Reflex \uparrow HR \rightarrow $\downarrow\downarrow$ coronary filling \rightarrow <u>Avoid</u> in IHD / SLE like / flushing. |
| 2) CCBs • Cerebral. • Coronary • periph. VD -ve Ino & Chronotropic | SEE ISHD. | 1) H + BA 2) H + DM 3) H + ISHD 4) H + Pregnancy 5) H + Diastolic dysf. 6) H + PVD 7) H in elderly | |
| 3) Diazoxide | | 1) H encephalopathy. 2) Insulinoma. | (-) insulin release <u>Avoid</u> in D.M |
| 4) Minoxidil | | Topically for alopecia | Hyper-trichosis |

b. VENO-dilators

| | | |
|---------------|--------|---------------------------------|
| Nitrates inf. | Tridil | SEE ANGINA + H. ENCEPHALOPATHY. |
|---------------|--------|---------------------------------|

c. Mixed VD

| | | | |
|--|--|---|--|
| 1) Na Nitro-prusside | Niprid "v. potent" | 1-H encephalopathy 2-Cardiogenic PE | 1) Hypotension. (sever) 2) Cyanide toxicity in liver D. (pink color / dilated pupil) 3) Thio-cyanate toxicity in Renal D. (Tinnitus / skin rash) |
| 2) ACE-I (\downarrow ANG-II... \rightarrow VD / \downarrow Aldosterone) | Capotin Tritace Ezapril Zestril | 1) HTN. 2) HF. (\downarrow Remodeling) 3) D. Nephropathy \downarrow IGP dt VD of eff. A. (Reno-protective) 4) Renal HTN. | 1) chronic dry cough \Rightarrow <u>Use</u> ARBS 2) hyperkalemia \Rightarrow <u>Monitor</u> K / s. Cr. 3) Nephrotic \$. (Membranous GN) # in pregnancy \Rightarrow teratogenic. # in Bi-lateral RAS. |
| 3) ARBs | Cozar (Losartan) Tareq (Valsartan) | As above but <u>no cough</u> . | |

TACHY-ARRHYTHMIA

| <i>sinus Tachycardia</i> | PAT | PUT | ATRIAL FLUTTER | ATRIAL Fibrillation |
|--|--|--|--|---|
| SAN discharges impulses > 100 – 160 / m | paroxysmal attack of ectopic focus in atrium > 200 / m (<u>regular</u> <u>Tachycardia</u>) | paroxysmal attack of ectopic focus in Ventricle > 200 / m (<u>regular Tachycardia</u>) (no retrograde conduction) | ectopic focus in atrium > 200 / m (<u>regular</u>) ⇓ presentation according to the A-V block. | Multiple ectopic foci in atrium discharge 400-600 / m. (v. rapid Irregular) ⇓ presentation according to the A-V block. |
| | | <div style="text-align: center;"> <div>A-V Dissociation</div> <div> <div>V. follows focus</div> <div>Atria follows SAN</div> </div> </div> | <div style="text-align: center;"> <div>SHORT-lived ARRHYTHMIA</div> <div> <div>RETURN TO SAN</div> <div>PROGRESS TO AF</div> </div> </div> | <div style="text-align: center;"> <div>M/C SUSTAINED ARRHYTHMIA</div> <div> <div>↑ HR</div> <div>↓ HR "slow AF in Digitalis Toxicity"</div> </div> </div> |

➤ CAUSES

| | | | | |
|--|--|---|--------------------|--|
| 1) FUNCTIONAL <ul style="list-style-type: none"> STRESS, EXCESS COFFEE, SMOKING. PREGNANCY, FEVER. ANEMIA, THYRO-TOXICOSIS. 2) HF (V. COMMON) → COMPENS. ↑HR. 3) DRUGS <ul style="list-style-type: none"> ATROPINE - B₂AGONIST. THYROXINE VD. (NIFEDIPINE) SYMPATHOMIMETIC. (TTT. OF COPD / BA) EI DUE TO DIURETICS / LAXATIVES. | 1) FUNCTIONAL: STRESS, EXCESS COFFEE, SMOKING 2) DRUGS: SYMPATHOMIMETIC. (TTT. OF COPD / BA) | DISEASED HEART <ul style="list-style-type: none"> ISCHEMIC H.D CONG. H.D RHEUMATIC H.D MYOCARDIAL INFARCTION. DIGITALIS TOXICITY. → V. EXTRA-SYTOLE → VT → VF. ABUSE OF ANTI-CHOLINERGIC (TCA- ANTI-HISTAMINICS) | ORGANIC HD. | ↑ LA pr. / ↑ LA dilat. <ol style="list-style-type: none"> Rh. MS (↑ LA pr.) ASD (LA++) ISHD (↓ V. compliance → ↑ LA pr.) HTN (LV++ → LA++) CONSTRUCTIVE PERICARDITIS. (Catching of LV → ↑ LA pr) IEC. Thyrotoxicosis. (Thyrocardia) Pulm emb → ACUTE pr. Load on RV. Wolf Parkinson White \$. (Additional pathway) LONE AF. (unknown cause) |
|--|--|---|--------------------|--|

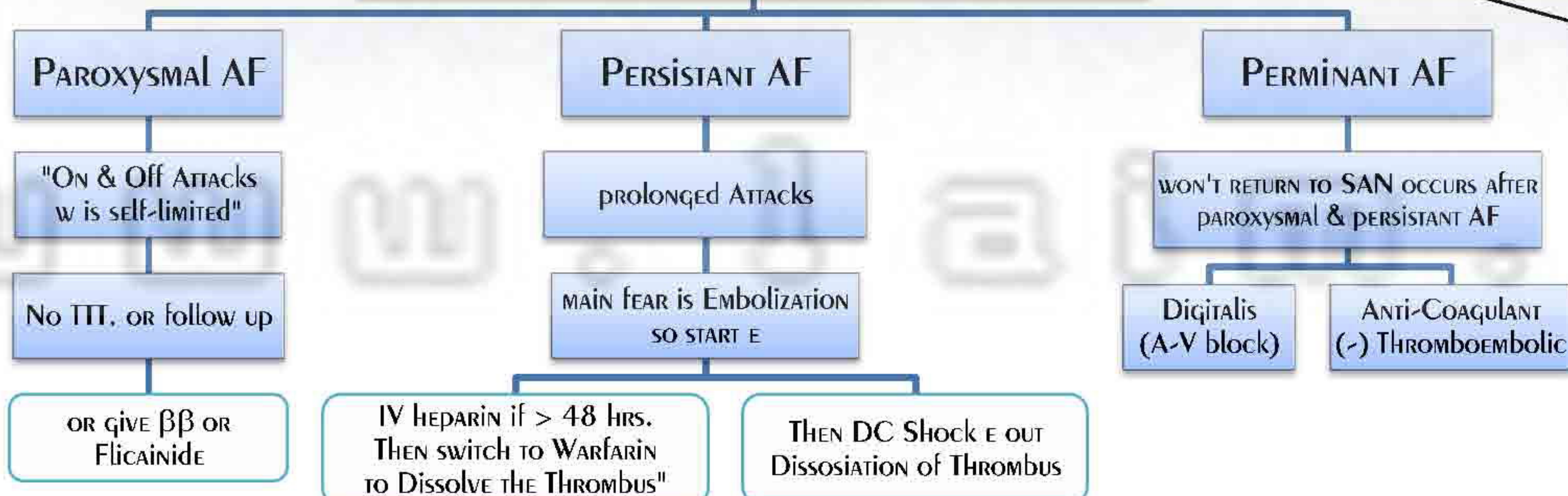
➤ Cl./P of Arrhythmias

| | <i>S. Tachycardia</i> | PAT | PVT | ATRIAL FLUTTER | ATRIAL FIBRILLATION |
|---|---|---|--|--|--|
| 1) palpitation <ul style="list-style-type: none"> onset offset rhythm duration what ↑ or ↓ | <u>أوصف نفسك و انت طالع السلام</u> GRADUAL GRADUAL REGULAR ↑↑ BY EXERTION | SUDDEN SUDDEN REGULAR VARIABLE RECURRENT & FREE IN BET. ATTACKS | SUDDEN SUDDEN REGULAR VARIABLE | As PAT SUDDEN SUDDEN REGULAR SHORT LIVED ARRHYTHMIA THEN TURN TO → SAN OR AF. | IRREGULAR OCCURS AT REST. SUSTAINED ARRUTHMIA. ↑↑ WITH EXERTION |
| 2) ↓COP symptoms (Dizziness / Syncope) | ✗ | ✓ | ✓ | ✓ DT SEVERE TACHYCARDIA | ✓ |
| 3) of the cause | ANEMIA / THYRO-TOXICOSIS | Palpitation then Chest pain ... Arrhythmia. Chest pain then Palpitation ... ISHD. | ISHD / MI. | | |
| CARDIAC SIGNS | | | | | |
| 1) pulse <ul style="list-style-type: none"> HR rhythm | 100 – 160 REGULAR | UP TO 200 REGULAR | UP TO 200 REGULAR | TACHYCARDIA. (REGULAR) VENTRICULAR RATE = ½ ATRIAL (2:1 AV BLOCK) | <ul style="list-style-type: none"> Irreg. irregularity (↑↑ e exertion) PULSES DEFICIT > 10 / MIN. |
| 2) BP. | NORMAL | ↓↓ BP DT ↓ HEART FILLING | ↓↓ BP DT ↓ COP | ↓ E SEVER TACHYCARDIA | VARIABLE (AVERAGE OF 3 TIMES) |
| 3) CAROTID MASSAGE | ✓ | ✓ | ✗ | ✓ | ✗ (DT MULTIPLE FOXI) |
| 4) RESP. SINUS | ✓ | ✗ | ✗ | ✗ | ✗ |
| 5) NECK VEINS = CANON WAVE | ✗ | ✗ | ✓ ... OCCASIONAL (A-V DISSOCIATION) | ✗ (Rapid, multiple A waves before each V wave) | ABSENT A WAVE. |
| HS | ↑ S ₁ & S ₃ GALLOP ON APEX DT HF | ↑ S ₁ | occasional CANON SOUNDS. | ↑ S ₁ + MURMUR. | S ₁ VARIABLE + MURMUR. |
| INVEST. 1) ECG. (HLOTER IN BET. ATTACKS) 2) Echo. 3) of THE CAUSE. | SINUS R. > 100 / M. 1) Thyro → T ₃ , T ₄ , TSH. 2) ANEMIA → Hb. 3) DIURETICS → M _G / K. | DEFORMED P WAVES: 1) Rapid > 200/M. 2) REGULAR. 3) <u>NARROW QRS. "NORMAL"</u> | 1) Rapid. 2) REGULAR. 3) <u>BIZARRE SHAPED QRS.</u> ➤ ↓ s. K & M _G . | 1) Saw TOOTH app. (FLUTTER WAVES) | 1) <u>IRREGULAR</u> RHYTHM. 2) <u>ABSENT P</u> WAVE. 3) T ₃ , T ₄ , TSH. |

TREATMENT OF ARRHYTHMIA

| <i>S. Tachycardia</i> | PAT | PUT | ATRIAL FLUTTER |
|--|--|---|--|
| <p><u>Only if Symptomatic</u></p> <p>1) Avoid RF:</p> <ul style="list-style-type: none"> • smoking. • Caffeine. • Chocolate. <p>2) $\beta\beta$ → CONCOR COR</p> | <div style="display: flex; justify-content: space-around;"> <div> <p>DURING THE ATTACK</p> <div style="display: flex; justify-content: space-between;"> <div> <p>CAROTID MASSAGE</p> <p>IV DRUGS</p> <div style="border: 1px solid black; padding: 5px;"> <p>1) IV VERAPAMIL: "of CHOICE" (v. slowly + CA GLUCONATE)</p> <p>2) IV $\beta\beta$ in Thyro..</p> <p>3) ADENOSIN → No -ve inotropic (so used in HF & Shock)</p> <p>4) IV Digitalis</p> </div> </div> <div> <p>DC shock</p> <p>DOESN'T AFFECT CONTRACTILITY</p> <p>USED IN HF / Shock</p> </div> </div> </div> <div> <p>INBETWEEN THE ATTACK</p> <div style="border: 1px solid black; padding: 5px;"> <p>1) HF → Digitalis.</p> <p>2) STRESS/ Thyro-toxicosis → $\beta\beta$.</p> <p>3) ISHD → VERAPAMIL</p> </div> </div> </div> | <div style="display: flex; justify-content: space-around;"> <div> <p>DURING THE ATTACK</p> <div style="display: flex; justify-content: space-between;"> <div> <p>IV drugs</p> <div style="border: 1px solid black; padding: 5px;"> <p>1) IV LIGNOCAINE..</p> <p>2) IV PHENYTOIN in Digitalis Toxicity.</p> </div> </div> <div> <p>DC shock "if \downarrowBP / PE"</p> </div> </div> </div> <div> <p>INBETWEEN THE ATTACK</p> <div style="border: 1px solid black; padding: 5px;"> <p>1) of the CAUSE.</p> <p>2) AMIODARONE.</p> <p>3) IMPLANTABLE DEFIBRILATOR.</p> </div> </div> </div> | <p>1) DC shock.</p> <p>2) $\beta\beta$.</p> <p>3) CCB. "VERAPAMIL"</p> <p>4) Digitalis.</p> |

TTT. of Atrial Fibrillation



Complications of AF:

- 1) **STAGNATION of bL in LA**
→ **Thrombo-emboli to brain** → Cognitive dysfunction. → so do **MRI**.
- 2) **ANGINA** dt \uparrow HR & \downarrow COP.
- 3) **AGGRAVATE HF & PVC.**

| | EXTRA-SYSTOLE | <i>sinus Bradycardia</i> |
|----------------|---|--|
| | extra beat ... dropped or strong beat | HR < 60 /m. (SAN is the pace maker) |
| CAUSES | 1) FUNCTIONAL: <ul style="list-style-type: none"> Smoking / Stress Excess Coffee. ↓Mg. 2) RHEUMATIC HD. 3) DRUGS (↑ HR) → Sympatho.. / Digitalis toxicity. (bi-geminy) | 1) Physiological → Sleep & Athletes. 2) Obst. JAUNDICE → Bile salts → ⊖ SAN / AVN. 3) hypothyroidism: <ul style="list-style-type: none"> fe constipation. HR = 62 /m Skin abnormality. "Myxedema" 4) BRAIN TUMOR → ↑ ICT → ↑ SBP / ↓ HR. (OR Sub-ARACH. hge) (Cushing Reflex) 5) DRUGS → BB - CCB - -digitalis |
| C/P | 1) Palpitations: (Occasional) <ul style="list-style-type: none"> irregular at rest & ↓↓ with exertion. 2) OF THE CAUSE. | 1) Asymptomatic. 2) Orthostatic hypotension in hot weather. 3) OF THE CAUSE. |
| SIGNS | <ul style="list-style-type: none"> Pulse → <u>regular irreg. or occasional irreg.</u> <ul style="list-style-type: none"> ✓ Pulsus bigeminy or Trigemny. ✓ Pulse deficit < 10 BP → NORMAL. CAROTID MASSAGE → × NECK VEINS → × <u>Local examination:</u> S ₁ variable intensity | <ul style="list-style-type: none"> Pulse → < 60 / m. (regular) BP → normal. NECK VEINS → × Resp. sinus → ✓ |
| INVEST. | 1) ECG / Echo. 2) T₃ T₄ TSH. 3) K – Mg. | 1) Echo & ECG → ↓ HR + SINUS RHYTHM. 2) T₃ T₄ TSH. 3) CORTISOL LEVEL. |
| TTT. | 1) OF THE CAUSE 2) NO TTT. AS LONG AS NO ORGANIC HD. 3) IN IRRITABLE PERSON → ββ. 4) DANG. EXTRA-SYSTOLE → MUST BE TTT. by AMIODARONE. <ul style="list-style-type: none"> frequent - multi-Focal Ventricular → VT → VF. Diseased beat. | (No safe drug to ↑↑BP or ↑↑HR) TTT. of Idiopathic hypotension: <p style="text-align: right;">(dr ↓ sympathetic outflow)</p> 1) plenty of fluids + ↑ Salts. 2) ACETONIN H. "Aldosterone Analogue" 3) Sympatho-mimetics "Midodrin®" <p style="text-align: right;">(قرص عند اللزوم 3 / day upto)</p> |

IMPORTANCE OF NECK VEINS IN ARRHYTHMIA.

- 1- AF & A. flutter.
- 2- extrasystole.
- 3- V. tachycardia.
- 4- Complete HB.

AMIODARONE IS USED IN TTT. of:

- 1) PAT.
- 2) V. TACH. (IN-BET. ATTACKS.)
- 3) DANG. EXTRA-SYSTOLE.
- 4) Wolf –PARKINSON WHITE \$.

HEART BLOCK

CAUSES of HEART block

PATHOLOGICAL

- 1) ISHD.
- 2) RH. HD
- 3) Cong. HD.
- 4) CARDIOMYOPATHY.

DRUGS

- 1) $\beta\beta$.
- 2) CCB.
- 3) Digitalis.

- 1) SAN block \rightarrow failure of SAN to \oplus ATRIUM.
- 2) BBB
 - \rightarrow Rt. BBB \rightarrow wide splitting $S_2 \rightarrow$ ECG findings.
 - \rightarrow Lt. BBB \rightarrow REVERSED splitting $S_2 \rightarrow$ ECG findings.
- 3) A-V Block \rightarrow 3 DEGREES (SEE BELOW)

| | 1 ST degree HB | 2 ND degree HB | 3 RD degree HB = Complete HB |
|----------------------|---|--|---|
| | ECG finding = Fixed \uparrow P-R interval | partial HB So SOME impulses fail to pass from A \rightarrow V | A-V dissociation \rightarrow Idio-ventricular rhythm. |
| CL./P | NOT DANGEROUS & OCCURS physiological during SLEEP & in ATHELETES. dt \uparrow VAGAL TONE. | <ul style="list-style-type: none"> Asymptomatic Bradycardia. \downarrow COP \rightarrow <u>Adam's Stock Attacks in Mobitz II</u> <p>\rightarrow no impulses will pass from A to V \rightarrow transient arrest \rightarrow syncope.</p> <p>$\rightarrow \oplus$ Idio-ventricular rhythm \rightarrow patient regains his consciousness. (RECURRENT SYNCOPE)</p> | <ul style="list-style-type: none"> Palpitation. (regular - slow) \downarrow COP - Adam's stock attack. (Recurrent Syncope) <p>Signs</p> <ul style="list-style-type: none"> Pulse < 60 (35 - 40 /m - Regular) $\downarrow\downarrow$ BP or Systolic HTN (acc. to the myocardium) Neck veins: \pm Cannon wave |
| INVEST. = ECG | Fixed \uparrow P-R interval (> 0.2 second) مربع كبير (All impulses from SAN pass to ventricles) | <div> <div>Mobitz Type I</div> <div>Progressive prolongation of P-R interval followed by dropped QRS (Wenckebach's phenomenon)</div> </div> <div> <div>Mobitz Type II</div> <div>P waves $>$ QRS. \downarrow ratio 2:1, 3:1</div> </div> | <ul style="list-style-type: none"> Regular Bradycardia. A-V dissociation = P \gg QRS. |
| TREATMENT | <ol style="list-style-type: none"> 1) SEARCH FOR THE CAUSE. \rightarrow SEE b4 2) Avoid Digitalis BB CCB | <ol style="list-style-type: none"> 1) CAUSE. 2) Atropine \rightarrow ENHANCE CONDUCTION 3) PACE MAKER. | <ol style="list-style-type: none"> 1) OF THE CAUSE. 2) Atropine 3) PACE MAKER. "THE BEST" |

Wolff Parkinson white \$

ABNORMAL CONNECTION bet. Atria & Ventricles by-passing the AVN

\rightarrow short P-R interval

\rightarrow V. Tach. \pm AF may occur \rightarrow collapse.

TTT.

- 1) Amiodarone \rightarrow \downarrow conduction in accessory pathway.
- 2) # Digitalis and Verapamil \rightarrow \uparrow conduction in accessory pathway.
- 3) Radio freq. ablation pathway.

Sick Sinus \$

SAN disease due to degeneration, ischemia.

It may lead to :-

- Sinus bradycardia.
- Sinus arrest. (Adam Stock's syncope)
- Paroxysmal tachycardia.
- Paroxysmal AF.
- TTT: PACE-MAKER.

CAUSES of Systolic HTN:

- 1) AI.
- 2) Atherosclerosis.
- 3) Throtoxicosis.
- 4) **Complete HB.** (dt \uparrow Time of V. filling + if the V. is Strong)

TREATMENT OF ARRHYTHMIAS

TTT. of Arrhythmia

PAROXYSMAL

Non-PAROXYSMAL

DURING THE
ATTACK

IN BETWEEN THE
ATTACK

MAINT. TH. "ORAL"
FROM THE START.

IV drugs OR
DC shock

MAINTENANCE TH. by
ORAL drugs

CLASS I

Quinidine - procainamid
lignocaine - phenytoin.
flecainide
They ⊖
excitability & conduction.

CLASS II

BB

CLASS III

Amiodarone

CLASS IV

CCB. (verapamil)

| | Mechanism | Uses | S/E |
|---------------|--|---|--|
| 1) VERAPAMIL | CCB | PAT | C b4 |
| 2) LIGNOCAINE | Na ch. blocker | V. Tach. (DURING THE ATTACK) | convulsion- confusion |
| 3) PHENYTION | Na ch. blocker | DIGITALIS INDUCED V. TACHYCARDIA. | |
| 4) QUINIDINE | (-) Atrial Foci | AF. | Allergy - <u>Cinchonism</u> (N V Tinnitus) ↑ A-V conduction → so Add Digitalis before. |
| 5) B.B. | <ul style="list-style-type: none"> Sotalol (β-core) Bisoprolol. Atenolol. | STRESS Thyro.. Arrhythmia: <ul style="list-style-type: none"> Sinus Tachycardia. Extrasystole. PAT. | |
| 6) AMIODARONE | CCB. K channels. Na channels. | ANTI-ARRHYTHMIC (BS) <ul style="list-style-type: none"> PAT V. Tachycardia. (in bet. Attack) DANG. EXTRASYSTOLES. WOLF-PARKINSON WHITE S | <ul style="list-style-type: none"> Corneal deposits → Slit lamp / 6ms. Thyroid dysfunction → T₃ T₄ TSH. (mainly hypo-thyroidism) IPD. |
| 7) ADENOSINE | Block SAN & AVN. (Acts as Carotid massage + no -ve inotropic → good in HF) | PAT. HF. | # in HB (flushing, dyspnea, chest pain) |

Anticoagulants

| Indications = HEART & BRAIN | Contraindications |
|---|---|
| <ol style="list-style-type: none"> 1) Recent MI – unstable angina – AF. 2) Cerebro vascular insufficiency. 3) Thrombo-philia. 4) DVT, pulmonary. embolism | <ol style="list-style-type: none"> 1) Liver cirrhosis, haemorrhagic diseases. 2) GIT Ulcers. 3) IEC → cerebral hge. (although it is a Thrombo-embolic D. but Anti-Coagulants are for fear of rupture of Mycotic Aneurysm → ICH) 4) MI + pericarditis → haemopericardium. 5) Severe uncontrolled HTN. |

| | HEPARIN | ORAL = WARFARIN |
|----------------------|--|--|
| Action | ⊕ AT-III | ↓ Synthesis of Vit. K dep. FACTORS. (1972) |
| Controlled by | PIT = 1.5 - 2 control | PT = 1.5 control INR = (2.5 - 3.5) |
| Antidote | PROTAMINE sulphate - fresh blood. | vit. K. - fresh blood. |
| Dose | <ul style="list-style-type: none"> ◇ 1000 U / hr IV (Infusion) ◇ 5000 - 7500 U / 6 hrs (IV) ◇ 10,000 U sc / 8 hrs. (SC) | <ul style="list-style-type: none"> • PHENANDIONE (Dindevan) • WARFARIN. |
| PRECAUTIONS | <ol style="list-style-type: none"> 1) <u>AT-III deficiency</u> → ↓ heparin response. 2) <u>LMWH (Clexan)</u> → ↓ Incidence of hge. → Given without MONITORING. <ul style="list-style-type: none"> • Th. Dose → 60-80 U/12 hr. • Proph. Dose → 20 U / 12hr. | <ul style="list-style-type: none"> • ↓ FACTOR 7 after 6 hrs. • ↓ FACTOR 9 after 24 hrs. • ↓ FACTOR 10 and pro-thrombin after 48 hrs from the start of anticoagulant |

HEPARIN is STARTED CONCURRENTLY & WARFARIN FOR 3-5 days till WARFARIN REACHES THE THERAPEUTIC LEVEL.

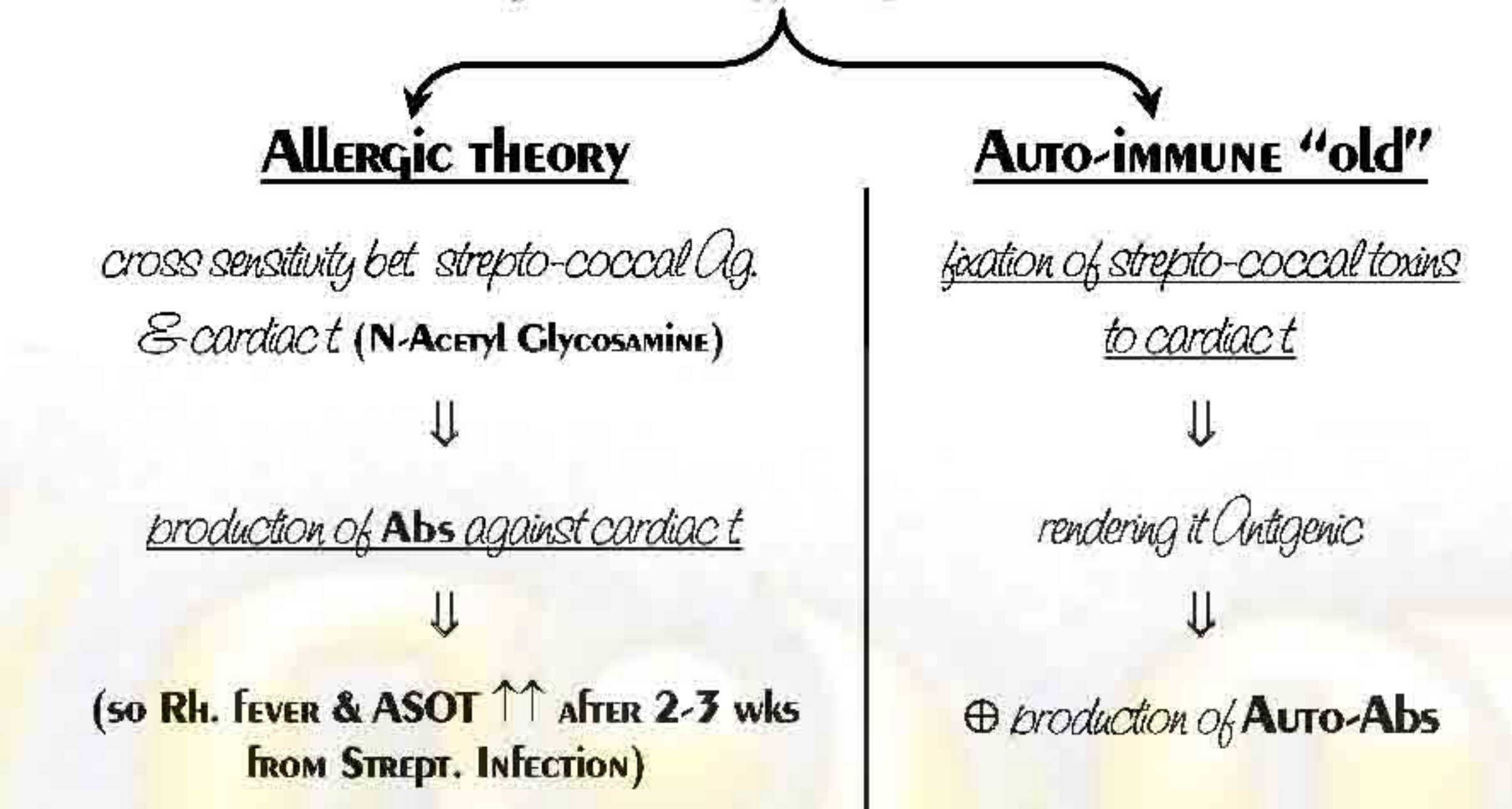
CARDIAC ARREST

| | V. Fibrillation | V. Asystole | ELECTROMECHANICAL Diss. |
|--------------------------|---|---|--|
| | (M/C) cause & the most easily treatable rapid ineffective mov. of the ventricles. | occurs when there is no electrical activity of the ventricles | no effective COP inspite of the presence of normal electrical activity. |
| CAUSES | <ol style="list-style-type: none"> 1) ISHD 2) ELECTROCUTION 3) hypokalemia. 4) STRUCTURAL HEART D. | <ol style="list-style-type: none"> 1) Adam's stock. (2nd or 3rd HB) 2) EXTENSIVE MI. | <ol style="list-style-type: none"> 1) TENSION PNEUMOTHORAX. 2) TAMPONADE. 3) MASSIVE PULMONARY EMBOLISM FROM DVT. 4) CARDIAC RUPTURE. |
| DIAGNOSIS ECG | Complexes wide QRS. bizarre irreg. | ISOELECTRIC line. | QRS without palpable pulse |
| TREATMENT | <p>DC Shock upto 3 TIMES</p> <p>↓</p> <p>AdRENALINE (1mg IV OR INTRA-CARDIAC)</p> <p>↓</p> <p>DC Shock</p> <p>↓</p> <p>INTERNAL Defibrillator</p> | <p>DC Shock+ Atropine</p> <p>↓</p> <p>AdRENALINE (1mg IV OR INTRA-CARDIAC)</p> <p>↓</p> <p>PACE MAKER</p> | <ol style="list-style-type: none"> 1) CPR 2) AdRENALINE 1 mg IV 3) <u>TREATMENT OF THE CAUSE:</u> <ul style="list-style-type: none"> • <u>TENSION pn.</u> → Needle in 2nd IC space MCL. • <u>pulm. Embolism</u> → Thrombolytic th. • <u>Tamponade</u> → URGENT PERICARDIOCENTESIS. |

rheumatic fever

"inflammatory disease following infection e Group A strepto-cocci

It is a multi-systemic d. affecting heart skin joints & CNS.



Epidemiology:

- 1) AGE: 5-15 ys. (SCHOOL AGE)
- 2) SEX: EQUAL (CHOREA COMMON IN FEMALES)
- 3) ↓↓ **SHINE + RECURRENT STREPTO-COCCAL INFECTION.**
- 4) FH

Diagnosis ⇒

MODIFIED JONE'S CRITERIA

| MAJOR "CASE" | MINOR |
|--|---|
| 1) C arditis. 2) A rthritis. 3) C horea. 4) S c node. 5) E rythema marginatum | 1) F ever 2) A rthralgia. 3) H istory of R heumatic fd. 4) ↑ T LC / E SR / C RP. 5) ↑ P-R interval. (1 st or 2 nd HB) |
| EVIDENCE OF STREPT INFECTION | |

- 1) Abs.
- 2) C&S.
- 3) Recent history of Scarlet fever.

RHEUMATIC FEVER CAN BE DIAGNOSED if THERE ARE

- 2 MAJOR + EVIDENCE OF STREPT. INFECTION.
- 1 MAJOR + 2 MINOR + EVIDENCE OF STREPT. INFECTION.

1) If ARTHRITIS is PRESENT → ARTHRALGIA is NOT A MINOR?

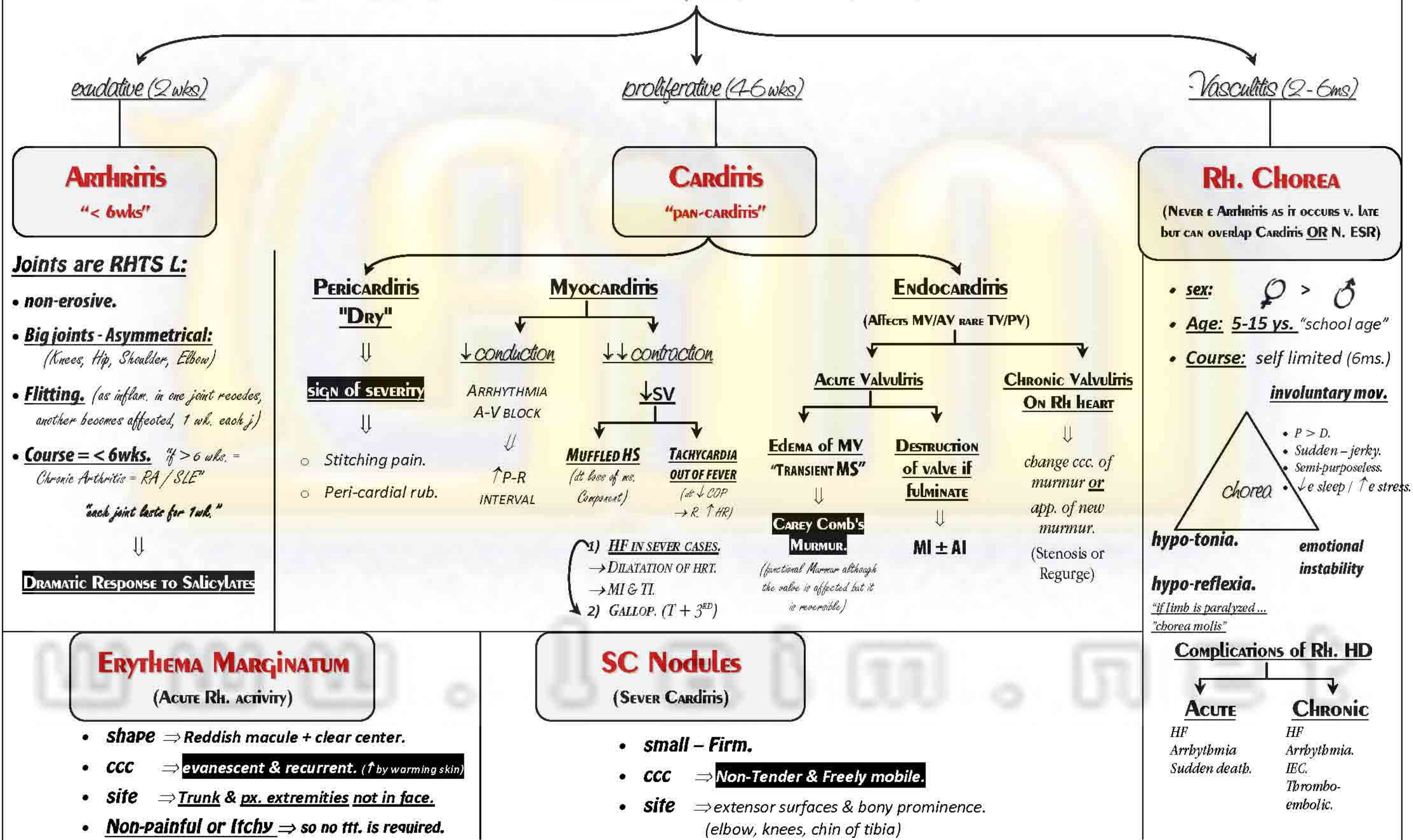
2) If CARDITIS is PRESENT → ↑ P-R INTERVAL is NOT A MINOR?

3) Rh. CHOREA (OCCURS AFTER 6MS.) → MAY NOT BE ACCOMP. BY OTHER MANIF. OF STREPT. INFECTION.

So DIAGNOSIS MAY BE BASED ON ONE MAJOR CRITERIA ONLY = CHOREA after exclusion of other causes of Chorea.

"inflammatory reactions of rheumatic fever"

(all respect their latent period & sequence from the onset of strept infection)



INVESTIGATIONS of Rh. FEVER

INFLAMMATORY DISEASE

↑ TLC / ESR / CRP.

RECENT STREPT. INF.

"BUT DOESN'T INDICATE Rh. FEVER"

STREPT Abs

↑↑ ASOT

v. high titer or
Rising titer is
DIAGNOSTIC

Other ABs

- Anti-DNAse.
- Anti-Hyaluridase.
- Anti-Streptozyme if ASOT is -ve.

THROAT C & S
& Rapid Ag.
DETECTION.

CARDITIS

- 1) X-RAY ⇒ Cardiomegaly.
- 2) ECG ⇒ ↑ P-R interval & tachycardia.
- 3) Echo ⇒ pancarditis & valvular affection that doesn't appear clinically.

PREVENTION of Rh. fever & Infective Endocarditis

1^{RY} PREVENTION

GENERAL

↑↑ SHINE
(COMMUNITY)

Specific

Early Diagnosis &
ERADICATION of STREPT. inf. for 10 days.

2^{RY} PREVENTION

PREVENTION of RECURRENCE

(LAP)

if the HEART is
INVOLVED

5 yrs. from the
LAST ATTACK

if the HEART is
INVOLVED

upto 25 yrs.
OR for life

3^{RY} PREVENTION

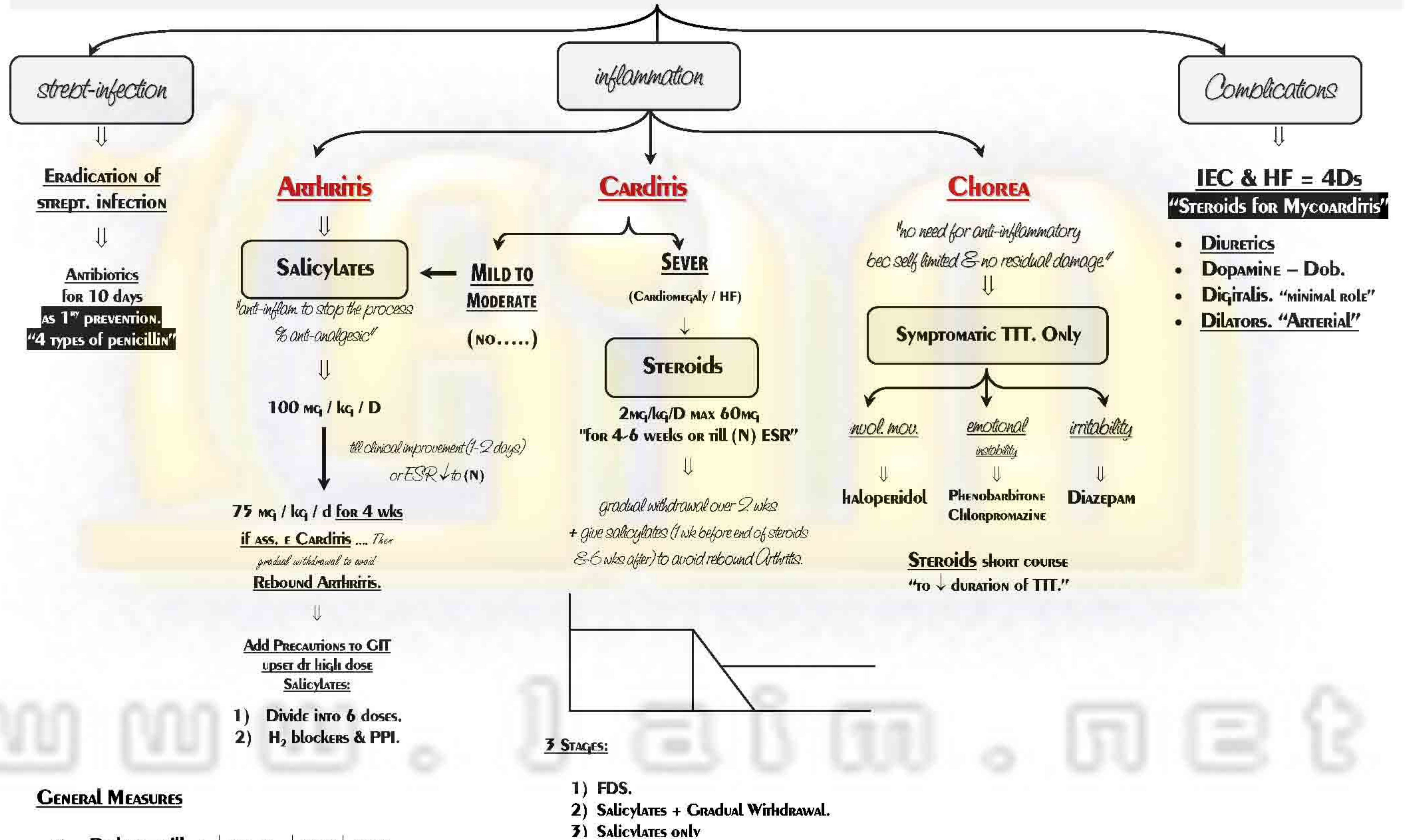
PREVENTION of IEC

Early Diagnosis & PROPER TTT. of
ANY focal INFECTION b4 BACTEREMIA

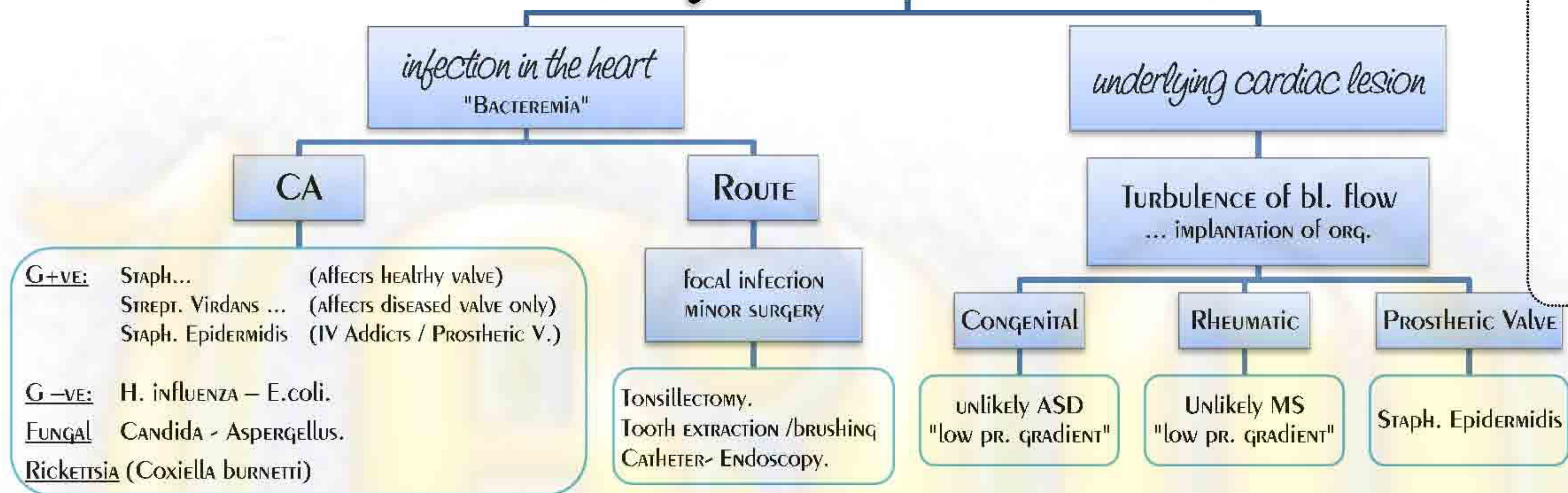
| Anti-biotics | 1 ^{RY} PREV. | 2 ^{RY} PREV. |
|---|--|----------------------------------|
| Penicillin G "Crystalline" Penicillin V "Oral" | 100,000 U / kg / d. | 250,000 U ONCE OR TWICE / day |
| PROCAINE penicillin | 600,000 U / d. | |
| LAP "single IM inj." | < 6 ys. → 600,000 U. > 6 ys. → 1.2 million U. | 1.2 million IU / 2 wks. |
| ERYTHROMYCIN if ALLERGY TO Oral penicillin. | 40mg / kg / d. | 250 mg TWICE/ day. |

| | URTI "STREPT viridians" | | UTI / GIT | |
|--------------------------------|-------------------------|--------------|-------------------------|----------------------------------|
| | Amoxicillin | Erythromycin | Add IM Genta-mycin | Erythromycin OR VANCOMYCIN |
| BEFORE "by 1 hr" | 50 mg/kg | 20 mg/kg | 2mg/kg initial dose. | |
| AFTER by 6hrs for 2d | 25 mg/kg/... | 10 mg/kg/... | BEFORE only | |

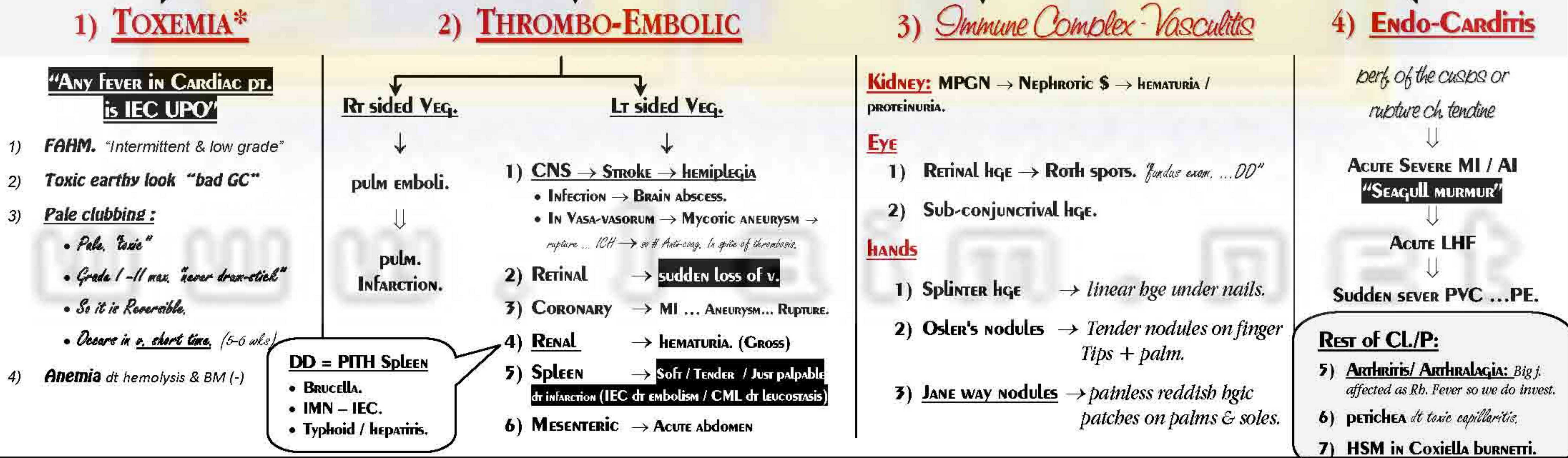
Ttt of rheumatic fever



Infective Endocarditis



CL./P of Infective Endocarditis



INVESTIGATIONS of *Infective Endocarditis*

INFLAMMATORY DISEASE

↓
 ↑ **TLC / ESR / CRP.**
NROMO/ NORMO ANEMIA

EVIDENCE of BACTEREMIA

Blood Culture

3 samples
 (aerobic / Anaerobic / special)

↓
 If (-ve) C & S due to:

- 1) **ABS therapy.**
- 2) **FASTIDIOUS ORGANISMS:**
 (Chlamydia – Legionella –
 Coxiella Burnetii)

AUTO-IMMUNE Abs

- **CIC** (↓ C₃, C₄ dr CONSUMPTION)
- **+VE RF**

Focal GN

↓
URINE A.
proteinuria
hematuria

DISEASES

Endo-CARDITIS

- ↓
- 1) **ECG** ⇒ ↑ P-R interval & HR.
 - 2) **Echo (TRANS-oesoph.)** ⇒ *small vegetations.*
 - **IEC.**
 - **DISSECTING AORTIC ANEURYSM.**
 - **ASD.**

III. of infective endocarditis

"TTT. should be STARTED if IEC is Suspected"

MEDICAL

- ↓
- IV Empirical ABS till C&S**
- **IV penicillin G** 200,000 IU/kg/d
 - **IV GENTAMYCIN** 3-5 mg /kg/d.
 - **ANTI-STAPH. = VANCOMYCIN.**
- ↓
- AFTER C&S GIVE AB FOR AT 4-6 wks.**

NB: The prophylactic LAP for Rh. fever DOES NOT PREVENT IEC.

SURGERY

if PERSISTENT FEVER &
APPROPRIATE ABS

- **VR "prosthetic".**
- **Abscess.**
- **Large veg.**

PREVENTION

"EARLY DIAGNOSIS & PROPER TTT. + PROPHYLAXIS"

| PROCEDURE | ANTIBIOTIC REGIMEN |
|--|--|
| 1) DENTAL OR URTI UNDER GA OR LA | Amoxicillin: 1000 mg / 12 hr. <ul style="list-style-type: none"> • 2 days before procedure. • The Day of procedure. • 2 days after the procedure |
| • If ALLERGIC | Clindamycin 600mg orally 1 hr before VANCOMYCIN infusion over at least 2 hrs. |
| 2) SPECIAL-RISK PATIENTS: <ul style="list-style-type: none"> • PROSTHETIC VALVE. • PREVIOUS ENDOCARDITIS. • GENITOURINARY PROCEDURES. | <ul style="list-style-type: none"> • AMoxicillin (IV + Oral) • GENTAMYCIN 120 mg i.v. at induction + • If ALLERGIC: VANCOMYCIN infusion over at least 2 hrs. |

| | MS | MI | AS | AI |
|--|--|--|--|---|
| <div><div><u>CAUSES</u></div><div><u>Organic</u></div></div> | <div><u>RHEUMATIC "almost always"</u><ul style="list-style-type: none">PART OF MULTI-VALVULAR LESION.ISOLATED MS (M/C).</div> <div><u>OTHER ORGANIC CAUSES:</u><ul style="list-style-type: none">a) <u>Calcific MS</u> in elderly, Congenital MS.b) <u>LUTENBACHER'S \$</u> (Rh. MS + ASD)c) <u>CARCINOID TUMORS</u> METASTASIS TO LUNG, OR 1^{RY} BRONCHIAL CARCINOID.</div> | <div>1) Rh. F – IEC.</div> <div>2) MV prolapse.</div> <div>3) Ischemic papillary ms .</div> <div>4) HOCM.</div> <div>5) SLE.</div> | <div>1) <u>Valvular</u></div> <div><div><div>a) Child</div><div>Rh AS almost always ASS. E MVD.</div></div><div><div>b) Old</div><div>Calcific AS ± CORONARY HD. YOUNG → Calcific Bicuspid AV.</div></div><div><div>c) طفل</div><div>CONG AS almost always isolated.</div></div></div> <div>2) <u>sub-valvular</u> AS ⇒ HOCM.<ul style="list-style-type: none">squatting → ↑VR → hrt dilate → ↓ aort. → ↓ murmurVasalva → ↓VR → ↓ hrt dilat. → ↑ Obst. → ↓ murmur</div> <div>3) <u>suba-valvular</u> AS<ul style="list-style-type: none">ELFIN FACIES.MR. (William's \$)</div> | <div>1) Rh. fever</div> <div>2) \$ AORTIC ANEURYSM → AI</div> <div>3) Post Valvotomy.</div> <div>4) <u>SYSTEMIC diseases:</u><ul style="list-style-type: none">a) Ankylosing Spondylitis.b) RA → "AORTITIS"c) Marfan \$. (WEAK WALL OF AORTA)</div> <div>5) Endocarditis.</div> <div>6) Dissection of AORTA. (ACUTE AI)</div> |
| <div><u>Functional</u></div> | <div>1) <u>CAREY COOMB MURMUR:</u> (Rh. activity → edematous cusps → Transient MS → reversible)</div> <div>2) <u>AUSTIN FLINT MURMUR:</u> IN \$ AI (REGURGED BL. → ↑ DIASTOLIC PR. IN LV → INTERFERES WITH FULL OPENING OF MV)</div> <div>3) <u>VSD</u> DT OVER FLOW ACROSS MV.</div> | <div><u>LV dilatation</u> dt</div> <div>a) AI.</div> <div>b) HF.</div> <div>c) Dilated cardio-myopathy.</div> | <div>1) SEVERE AI</div> <div>2) HPER-DYNAMIC CIRCULATION.</div> | |
| <u>HAEMO-DYNAMICS</u> | | | | |
| <div><div><u>TIGHT MS = MS Index < 25%</u><ul style="list-style-type: none">Symptom: marked Dyspnea – Orthopnea. + P⁺⁺Sign: prolonged Murmur + OS nearby S₂INVEST.: Echo → VALVE AREA < 1 CM.TTT.: pure → Valvotomy / Calcific → VR</div></div> | | | | |

| | MS | MI | AS | AI |
|----------------|---|--|---|---|
| ➤ <u>CL./P</u> | <p>Asymptomatic.</p> <p>1) <u>↑ LA pr. → PVC</u> (Dyspnea....)</p> <ul style="list-style-type: none"> Gradual onset → pulm. VC → no PND or PE except if AF. slowly prog. long duration <p>2) <u>P⁺⁺ → RV⁺⁺ "LATE" → SVC.</u></p> <p>3) <u>↓ COP → EXERTIONAL & v. LATE bec.</u></p> <p>a) <u>Early PVC</u> → Dyspnea → pt. can't exercise → no ↓ COP symp.</p> <p>b) <u>Late P⁺⁺</u> → ↓ PVC → ↓ Dyspnea → so pt. exercise → ↑ VR / HR → ↓ COP.</p> <p>4) Palpitations. (irregular dt AF)</p> | <p>1) Palpitations. (Regular dt v. load)</p> <p>2) <u>PVC due to MI & LVF</u></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><u>ACUTE MI</u></p> <p>↓</p> <p><u>↑ LA pr. > dilatation</u></p> <ul style="list-style-type: none"> Rupture cb. tendinae. perf. cusps. dt IEC. Rupture pap. ms. dt M. Infarction <p>↓</p> <p>Sever PVC & PE</p> </div> <div style="text-align: center;"> <p><u>CHRONIC MI</u></p> <p>↓</p> <p><u>↑ LA dilat. > pr.</u></p> <p>Dt gradual LA dilat. + V. OL on LV</p> <p>↓</p> <p>LVF (late) bec. bl. has 2 pathways</p> </div> </div> <p>3) <u>↓ COP symptoms.</u> "If SEVER"</p> <p>4) RVF (LATE) → SVC.</p> | <p>Asymptomatic for many yrs UN-like MS but DETERIORATE rapidly if symptoms develop.</p> <div style="text-align: center;"> <p>TRIAD "on exertion"</p> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><u>chest pain</u> On exertion dt</p> <p>↓</p> <p>• ↓ COP • LV⁺⁺ • Coronary As. (in old age)</p> </div> <div style="text-align: center;"> <p>↓ cop "syncope"</p> <p>↓</p> <div style="display: flex; justify-content: space-around;"> <p>exertion dt ↓ peripheral VD → reflex ↑ HR but ↓ COP AGAINST AS</p> <p>at rest in elderly dt ↓ Ca⁺⁺ of AVN ↓ Adam Stock's Attack</p> </div> </div> <div style="text-align: center;"> <p><u>LVF "late"</u></p> <p>↓</p> <p>PVC</p> <p>↓</p> <p>EXERTIONAL Dyspnea</p> </div> </div> | <p><i>mild AI → palpitations only.</i></p> <div style="text-align: center;"> <p>Sever AI</p> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><u>chest pain</u> at rest dt</p> <p>↓</p> <p>↓ DBP < 50 → ↓ CORONARY filling during Diastole</p> </div> <div style="text-align: center;"> <p><u>palpitations</u></p> <p>↓</p> <p>regular dt V. load</p> </div> <div style="text-align: center;"> <p><u>Dyspnea</u></p> <p>↓</p> <p>dt ↑ LV Diastolic pr.</p> <p>↓</p> <p>Backward failure</p> </div> </div> |

➤ **GENERAL SIGNS**

| | | | | |
|--|---|---|---|--|
| | <p>1) MALAR FLUSH: dusky pink disc. over cheeks due to A-V anast. + Vascular stasis!</p> <p>2) PVC → <u>Bilat. Fine Basal Crepitations</u></p> <p>3) <u>↓ COP signs.</u></p> <p>4) RVF → SVC signs.</p> <p>5) AF occurs (v. LATE)</p> <ul style="list-style-type: none"> AGG. PVC. (PND OR PE) AGG. ↓ COP. EMBOLIZATION. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <ul style="list-style-type: none"> MS → Dyspnea (early LA⁺⁺) → Palpitations (AF)... Irregular MI → Palpitations (Vol. OL) → Dyspnea (late LA⁺⁺ but v. large) Regular. </div> | <p style="text-align: center;">SAME AS MS BUT NO MALAR FLUSH.</p> | <p style="text-align: center;">Plateau pulse. (small volume with slow-rising)</p> <p style="text-align: center;"><i>how can you diff. bet....?!!</i></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><u>Valvular</u></p> <p>EJECTION SYSTOLIC CLICK</p> </div> <div style="text-align: center;"> <p><u>supra-u.</u></p> <p>ELFIN FACIES "WILLIAM \$"</p> </div> <div style="text-align: center;"> <p><u>sub-u.</u></p> <p>MURMUR HEARD ON PT. IN SQUATTING POS.</p> </div> </div> <p style="text-align: center;"><u>chest pain</u> → VALSALVA</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>AS</p> <p>↓</p> <p>EXERTIONAL dt</p> <p>↓</p> <p>peripheral VD → reflex ↑ HR but ↓ COP AGAINST AS</p> </div> <div style="text-align: center;"> <p>AI</p> <p>↓</p> <p>At REST</p> <p>↓</p> <p>dt ↓ DBP < 50 → ↓ CORONARY filling during Diastole</p> </div> </div> | <p style="text-align: center;">HEAD</p> <p>1) CORRIGAN'S SIGN: ↑↑ Carotid pulsation.</p> <p>2) CAROTID SHUDDERING: (s) thrill over carotid.</p> <p>3) DE-MUSSET SIGN: Nodding of head.</p> <p style="text-align: center;">UL</p> <p>4) WATER HAMMER PULSE: If Wide pulse pr. > 80 & DBP < 50)</p> <p>5) CAPILLARY PULSATION. Quincke's Sign. / Muller's Sign in uvula - lips</p> <p style="text-align: center;">LL</p> <p>6) PISTOL SHOT. "ON FEMORAL A."</p> <p>7) DUROZIEZ'S SIGN: S & D murmurs over Femoral A. on slight pr. e stethoscope.</p> <p>8) HILL'S SIGN: LL > UL by 40 mmHg.</p> |
|--|---|---|---|--|

| Inspection & palpation | MS | | MI | AS | AI |
|--|--|---|--|---|---|
| | STAGE OF PVC | STAGE OF P++ | | | |
| | • Chamber++ (Pulsations) • Thrill • Palpable HS | • LA++ → PUSHES RV ANT. NEAR CHEST WALL → LT. PARA-ST. PULS. • PA DILAT. → PULSATING P ₁ "systolic pulse followed by diastolic shock" • LT PARA-ST. HEAVE (RV++) • S₁ "SLAPPING APEX" (Palpable S ₁ + weak amplitude dt ↓ BV in LV) STAGE OF RVF → SVC | • LV++ (V. LOAD) → APEX SHIFTED DOWN & OUT. • (S) ON APEX, • S₁ "HYPER-DYNAMIC APEX" | • LV++ (CONCENTRIC HYPERTROPHY) → LOCALIZED APEX "SUSTAINED" → "SHIFTED IN LATE CASES" • (S) AT BASE NECK = ORGANIC AS • S₁ "HEAVY-SUSTAINED APEX" "THRUSTING" | • LV++ (S. DILATATION) → APEX SHIFTED DOWN & OUT. • S₁ "HYPER-DYNAMIC APEX" |
| | Auscultation | | | | |
| 1) HS | STAGE OF PVC 1) ↑ S₁ 2) OS DT OPENING M2/MV... VALVE 1) or pale MS 2) or wide in aortic MS 1) over MS → ↑ LA pr. → early closing of MV → RT heart failure etc. | STAGE OF P++ 1) ↑ S₁ (pulse component) 2) S₁ ON TRICUSPID. (RV++ → ↑ DIASTOLIC RV PR. → FORCEFUL RA CONTRACTION) | 1) ↓ S₁ MUFFLED. 2) ↑ S₁ IF PVC → P++ 3) S₁ ON TRICUSPID DT RV++. 4) S₂ GALLOP ON APEX (LVF) IN SEVERE MI. | 1) ↑ S₁ ↑ MS. COMPONENT (LV++) 2) ↓ S₂ ↓ AORTIC COMP (↓ A. PR.) 3) S₁ (DT ↑ DIASTOLIC PR. IN LV) 4) S₂ GALLOP ON APEX (LVF) | 1) S₁ NORMAL. 2) ↓ S₂ AORTIC COMP. BEC. AV DOESN'T CLOSE (AI) 3) S₁ AT APEX (↑ DIASTOLIC LV PR. → FORCEFUL ATRIAL CONTRACTION) |
| 2) MURMURS | • RUMBLING. • MID-DIASTOLIC + PRE-(S) ACCENTUATION. (MANTHA) • LOCALIZED AT APEX. | 1) ESM DT PA DILAT. OF PA "PV SCLEROSIS" 2) LATE → DILAT OF PV → P ₁ → Chamber steel m. | • SOFT - BLOWING. • PA+SYSTOLIC IF POST. LEAFLET IF ANT. LEAFLET max. at aortic & propagates to tricuspid max. at aortic & propagates to tricuspid | • HARSH. • EJECTION-SYSTOLIC • MAKATA₁ (PROPAGATING FROM BASE TOWARD) • LOUD • HARSH • E THRILL. } ORGANIC AS • NB: MURMUR ISN'T A GOOD GUIDE FOR SEVERITY OF AS (BEC LVF → ↓ COP → ↓ INTENSITY OF MURMUR) | • HIGH PITCHED — DECRESCENDO نبح • EARLY DIASTOLIC (Coccard Shuddering is (S) thrill while Murmur is Early Diastolic) • MAX. AT A₂ PT. LEANING FORWARD. MURMUR AT APEX IN AI is: a) AI. b) FUNCTIONAL MI (LV DILAT.) c) AUSTIN FLINT MURMUR. (MS) |
| HOW TO DIFF. bet. ORGANIC & FUNCTIONAL MS: 1) ↑ S₁ . 2) OS. 3) +ve S & S. | 3) CAUSES of silent MS: (↓ BL FLOW THROUGH M2) ASD + MS (LUTEN-BACHNER MS) P++ (PULM. VC → ↓ bl. flow to lung & tr. side) RVF (↓ COP to lung → ↓ bl. flow to LA) | | | | |

| | MS | | MI | AS | AI |
|-------------------------------------|--|--|--|---|---|
| Complications | 1) <u>VALVE</u> | 1) RF & IEC. "uncommon in MS dt (↓ pr. gradient across the MV + Marked MV thickening). 2) Calcifications. | | VALVE + MI <div>170/40 ↓ Wide pulse (130) ↓ peripheral signs ↓ LV Compensated</div> | VALVE + LVF. <div>AS / MS / LVF "↓ COP" ↓ ↓ SBP ↓ LV DeCOMPENSATED</div> <div>110/40 (↓ SBP) ↓ NARROW pulse (70) ↓ No peripheral signs ↓ LV DeCOMPENSATED</div> |
| | 2) <u>LT. ATRIUM</u> | 1) AF → ↑↑PVC → STASIS → BALL & VALVE THROMBUS → POSITIONAL SYNCOPE. 2) MARKED LA++ → MEDIASTINAL S. | | | |
| | 3) <u>P. VEINS</u> → PVC EAF → PE. | | | | |
| | 4) <u>P. ARTERIES</u> → P++ → EARLY.... REVERSIBLE DT PULM. VC / LATE.... IRREVERSIBLE DT SCLEROSIS OF PV. | | | | |
| | 5) <u>BED RIDDEN</u> → DVT → P. EMBOLISM. | | | | |
| INVEST. | 1) X-RAY. 2) ECG. | | 3) ECHO → (VALVE LESION / CALCIFIC / CHAMBER ⁺⁺ / PR. GRADIENT < 50 & EJECTION FRACTION) 4) CATHETER → PD / PO | (MI / AS / AI IS MANDATORY TO DO VR BEFORE LV DYSFUNCTION) | |
| ➤ TREATMENT | | | | | |
| MEDICAL "MILD CASES & FOLLOW UP" | <u>MILD PVC → MILD DYSPNEA</u> 1) PROPHYLAXIS FOR RF & IEC. (LOW RISK) 2) <u>TTT. OF COMPLICATIONS:</u> A) PVC → DIURETICS. B) AF → DIGITALIS + ANTI-COAG. C) REMODELING → ACE-I | | ✓ | <u>ttt. of Valvular AS</u> no role for medical ttt. in symptomatic pt. e pr. Gradient > 50 (BB TO ↓ TACHYCARDIA) | ✓ 1. Narrow pulse pr. 2. peripheral signs not evident 3. localized apex. |
| SURGERY "SEVER CASES" | <u>Operate Early before P⁺⁺ or AF if the pt. is sympt. or PVC Not Responding to Drugs</u> <div>Echo ├── <u>Calcific MS OR ASS. E MI</u> → VR └── <u>PURE MS</u> → Valvotomy.....SEQUALAE: ├── <u>Early Re-STENOSIS</u> → RECURRENCE OF SYMPTOMS → REPEAT VALVOTOMY. └── <u>POST-VALV. MI</u> → "POST-OP. PALPITATION "REGULAR"</div> | | 1) VR. 2) <u>VALVOTOMY B4 LVF</u> <ul style="list-style-type: none">SHIFTED APEX TO 6TH SPACE.S3.S. SYMPTOMS. <div>• STENOTIC LESIONS → ↓COP → Reflex ↑PR → so avoid ACE-I (VD) as it will disturb the hemodynamics. • REGURGE LESION → dilatation → Remodeling → give ACE-I</div> | 1) VR "IF PR. GRADIENT > 50" ⇒ IF DELAYED → IRREV. LVF → SUDDEN DEATH. 2) <u>VALVOTOMY</u> ⇒ TRANSIENT IMPROV. → RE-STENOSIS. (in Non-Calcific or Cong. type) | 1) VR. 2) VALVOTOMY. |

- **STENOTIC LESIONS** → ↓COP → Reflex ↑PR
→ so avoid ACE-I (VD) as it will disturb the hemodynamics.
- **REGURGE LESION** → dilatation → Remodeling → give ACE-I

| | TRICUSPID STENOSIS | TRICUSPID RESURGE |
|-------------------|--|---|
| ■ Etiology | 1) RHEUMATIC usually associated with MV or AV D. 2) CARCINOID \$ <ul style="list-style-type: none"> Metastasis in liver → leakage of Serotonin to Rt. Side of the heart → fibrogenesis → TS/PS → not fibrosed in lung → No effect on MV / AV except if Carcinoid \$ in lung. | 1) RV ++ (functional TI bec. MVD → PVC → P++ → RV++ → Dilatation of TV ring) 2) ACUTE TI → IEC (esp. IV Addicts...staph) 3) CONGENITAL TI → Ebstein's anomaly |
| ■ C/P | 1) ↓COP. 2) SVC → CONGESTED NECK VEINS → pre-systolic hepatic pulsation dt ↑ RA contraction against TS during late Diastole → pre-systolic hepatic pulsations. 3) If associated with MS / TS → ↓PVC → ↓P++ | RVF → SVC: 1) NECK VEINS CONGESTED – CYANOLCTERUS. <ul style="list-style-type: none"> Cyanosis of venous stagnation letras de Jandice 2) +ve HEPATOJUGULAR REFLUX. (systemic cyanotic pulse. Off the liver) 3) ASCITES PRECOX. |
| ■ O/E | <ul style="list-style-type: none"> Mid-diastolic Rumbling. on Tricuspid area. signs of SVC. | <ul style="list-style-type: none"> Pan-systolic MURMUR Rt. To STERNUM. (M1 "post. leaflet" heard near by Tricuspid area but not Rt. To Sternum). INCREASE WITH INSPIRATION |
| ■ Echo | RA ++ dt TS. | a) of the cause. |
| ■ III | 1) Valvotomy (occasionally possible) 2) V.R. (often necessary) | b) SVC → DIURETICS. c) TV plication or VR if ORGANIC TI. |

PULMONARY STENOSIS

| | |
|---|--|
| <ul style="list-style-type: none">CAUSES: Almost always congenital → valvular stenosis. Carcinoid \$ = sub valvular = infundibular.C/P ↓ COP (stenotic lesion) + RV++ → RVF → S.V.C. Chest pain (atypical) due to ↓ COP + Rt. V++O/E RV+ + & Thrill (base + to the left) | |
| <ul style="list-style-type: none">S₁ → ↓↓ P₂ + Wide splitting.S₂ → Gallop over tricuspid Area. (RVF)S₄ → on Tricuspid area. | <ul style="list-style-type: none">valvular PS → ejection (S) click as AS + post (S) murmurinfundibular PS → Ejection Systolic murmur over PA & Lower down. (like VSD) |

| INVESTIGATIONS | Echo or Catheter → if the Pul. C > 50 = SEVERE PS | | | | | | | | | | |
|---------------------------------|--|-------------|----------------|------------------------|---|-------------------------------|---|----------------|--------------|---------------------------------|-----------|
| III. | <table><tr><th>Valvular PS</th><th>Subvalvular PS</th></tr><tr><td>eject. (S) click as AS</td><td>*</td></tr><tr><td>post. st. stenotic dilatation</td><td>*</td></tr><tr><td>Functional P.S</td><td>Innocent P.S</td></tr><tr><td>Valvotomy (balloon valvoplasty)</td><td>Resection</td></tr></table> | Valvular PS | Subvalvular PS | eject. (S) click as AS | * | post. st. stenotic dilatation | * | Functional P.S | Innocent P.S | Valvotomy (balloon valvoplasty) | Resection |
| Valvular PS | Subvalvular PS | | | | | | | | | | |
| eject. (S) click as AS | * | | | | | | | | | | |
| post. st. stenotic dilatation | * | | | | | | | | | | |
| Functional P.S | Innocent P.S | | | | | | | | | | |
| Valvotomy (balloon valvoplasty) | Resection | | | | | | | | | | |

| | VSD | ASD | PDA | Fallots' Tetralogy |
|---------------------------------|--|--|--|---|
| CL./P | <p>1) Asymptomatic. (if small VSD)</p> <p>2) LUNG plethora</p> <p>→ EXERTIONAL DYSPNEA During suckling → Gr. R.</p> <p>→ RECURRENT CHEST INFECTIONS.</p> <p>3) LV ++ (V. load)</p> <p>→ PALPITATIONS. (Tachycardia felt by the mother)</p> <p>→ LVF A) SEVERE ↑PVC → ORTHOPNEA. (as PVC is already present at lung plethora)</p> <p>B) ↓COP → OLIGURIA & WEAK CRY.</p> <p>4) REVERSE OF THE SHUNT → CENTRAL CYANOSIS</p> <p>→ TRANSIENT ON EXERTION OR CRYING (↑VR to RV → RV pr. > LV → transient reverse shunt)</p> <p>→ PERMANENT if EISENMENGER'S S & dt P⁺⁺</p> | <p>1) Asymptomatic. (dt ↓ bl. shunted)</p> <p>2) LUNG plethora → RECURRENT CHEST INF.</p> <p>3) RV ++ → MI</p> <p>4) REVERSE OF THE SHUNT.....</p> <p>5) PALPITATIONS AF.</p> <p>MI is present in:</p> <p>a) CORONARY HD.</p> <p>b) HOCM.</p> <p>c) Low ASD. (primum)</p> | <p>1) Asymptomatic.</p> <p>2) PVC.</p> <p>3) PALPITATIONS.</p> <p>4) ↓ COP. (in LL)</p> <p>5) Differential Cyanosis if EISENMENGER'S S.</p> <p>DD of Differential Cyanosis: (Normal upper 1/2 + hypoxic lower 1/2)</p> <p>a) Acyanotic F4 = mild PS</p> <p>b) 3 shunts b4 reversal of Shunt.</p> <p>c) IPD</p> | <p>HYPOXIA causes:</p> <p>1) CYANOSIS CENTRAL SHORTLY AFTER BIRTH!!! (TILL DUCTUS CLOSES)</p> <p>2) CLUBBING → DRUM STICK.</p> <p>3) STUNTED GROWTH.</p> <p>4) Hyper-Cyanotic SPELLS → SQUATTING.</p> <p>COMPONENTS:</p> <p>1) PS → MOST. IMP. DETERMINES SEVERITY.</p> <p>2) VSD → non-functioning bec. RV & LV are subjected to equal pr. during systole dt (3)</p> <p>3) Over-riding of AORTA → CENTRAL CYANOSIS</p> <p>4) RV++ → mild bec. bl. has 2 pathways. (PA / Aorta)</p> |
| | Inspection & palpation | | | |
| • CHAMBER ++ بالتدقيق | <p>1) LV++ (V. load) → APEX SHIFTED DOWN & OUT</p> <p>2) P⁺⁺ → PA dilatation → PULSATING PULM. AREA.</p> <p>3) RV++ dt P⁺⁺ → Lt. PARA-ST. puls. (No VL bec. bl. reaches RV during systole & goes directly to PA → No VL)</p> | <p>1) RV++ (V. load) → Lt. PARA-ST. puls.</p> <p>2) P⁺⁺ → PA dilat. → PULSATING PULM. AREA.</p> | <p>• LV++ (CONCENTRIC HYPERTROPHY)</p> <p>→ LOCALIZED APEX "SUSTAINED"</p> <p>→ "SHIFTED IN LATE CASES"</p> | <p>• mild RV ++ → ± Lt. PARA-ST. puls.</p> |
| • Thrill | • ±(S) OVER LT PARA-ST. (RV++) | • | • CONT. OVER LT. INFRA-CLAV. AREA. | • (S) OVER PA dt MURMUR OF PS. |
| • Palpable Sounds | <p>• S₁ "PROMINANT APEX"</p> <p>• S₂ "DIASTOLIC SHOCK"</p> | • S ₂ "DIASTOLIC SHOCK" | • S ₁ "HYPER-DYNAMIC APEX" | • S ₁ "HYPER-DYNAMIC APEX" |
| | Auscultation | | | |
| 1) HS | <p>1) ↑ S₂ IF P⁺⁺ & WIDE SPLITTING.</p> <p>2) S₃ on apex dt LVF.</p> | <p>↑ S₂ dt functional PS ⇒ P⁺⁺</p> <p>Wide Fixed splitting</p> <p>v. load ↑ VR & deep insp. → ↑ RA pr.</p> <p>RBBB (ass.) → Closes the shunt but fixes RV filling. delay P₂</p> | <p>1) ↑ S₂ IF P⁺⁺ REVERSED SPLITTING.</p> | <p>↑ S₂ (single loud)</p> <p>↑ A2 ↓ P2</p> <p>dt ↑ Aortic bl. flow + AV opens in Dt PS ... ↓ pulse bl. flow → Single.</p> <p>RV → near to chest wall → Loud</p> |
| 2) MURMURS | <p>• Harsh - PAN-systolic. ± ESM over Pulm. Area dt P⁺⁺</p> <p>• MAX. LT. PARA-STERNAL.</p> <p>• PROPAGATED ALL OVER PRECORDIUM.</p> | <p>• Soft - Ejection systolic.</p> <p>• MAX. AT PA.</p> <p>• ± propagated TO Lt. PARA-ST. (func. PS)</p> | <p>• CONTINUOUS MACHINERY.</p> <p>• MAX Lt. INFRA-CLAVICULAR.</p> <p>• PROPAGATED TO Lt. PARA-ST.</p> | <p>• Harsh - Ejection systolic. (Of PS not VSD)</p> <p>• MAX. AT PULM. AREA if Valvular. OR Lt. PARA-STERNAL AREA if sub-valvular.</p> <p>• PROPAGATED TO INFRA-CLAV. AREA.</p> |

CO-ARCITATION OF THE AORTA

(NARROWING OF THE AORTA)

Types

- 1) **Infantile Type:** narrowing is Proximal to lt. subclavian → ↑↑↑ BP in head & neck → cerebral hge. → (Incompatible with life)
- 2) **Adult Type:** narrowing just distal to the origin of the lt. sub-clavian. (Isthmus)
 - FEMALES > MALES; MAY BE ASSOCIATED E
 - TURNER'S S.
 - Bicuspid STENOTIC AV.
 - ANEURYSM IN Circle of Willis (BERRY'S ANEURYSM)

C/P → HYPERTENSIVE Child ASYMPTOMATIC.

- 1) BP → UL > LL with radio-femoral delay.
- 2) LL ISCHEMIA → Caudication pain.
- 3) SUZMAN sign → pulsating intercostal arteries in the back.
- 4) **MURMURS IN CASES OF COARCTATION:**
 - a) on the back due to co-arc-tation.
 - b) On Aortic area Due to associated bicuspid AV (Dilated Aorta → AI)
 - c) Machinery murmur over the collaterals. (dt ↑↑ pr. gradient)

HYPERTENSION is dt:

- 1) Co-arcitation.
- 2) Descending Aortic Ischemia
→ Renal ischemia → ⊕ RAS
→ HTN.

INVESTIGATIONS: (MRI is diagnostic)

- 1) X-RAY → POST-STENOTIC dilatation.
- 2) AORTOGRAPHY.
- 3) CATHETER.
- 4) ROSLER'S SIGN: Notches in the lower parts of ribs due to ↑↑ pr. of IC collaterals.

TREATMENT

- 1) Surgery in early childhood (before Glomerulo-sclerosis → persistent HTN even after Surgery)
- 2) Resection & anastomosis.
- 3) graft may be needed.

➤ NB:

- ACQUIRED COARCTATION MAY OCCUR DUE TO TRAUMA OR TAKAYASU'S DISEASE.
- HYPERTENSIVE child → GN / COARCTATION

EISEMNGER'S S

- 20 % of cases of shunt esp. VSD
- Genetically determined dt persistence of the fetal pattern of the pulm arterioles (abnormal ms. P.)
- **C/P**
 - **Cyanosis – Clubbing.**
 - P++
 - ↓ C.O.P.
 - signs of P++ → pulsations / dullness / S₂ ↑ (P++)
- **INVESTIGATIONS**
 - 1) X-ray P++
 - 2) ECG P- pulmonale
- **III.:** Surgery is of no value bec. shunt acts as a safety valve → Heart & lung transplant?

DISEASES OF AORTA

- 1) **ANEURYSM of ASCENDING AORTA** → AI dt Syphilis → aneurysm of signs.
- 2) **ANEURYSM of the ARCH** → mediastinal S → Aneurysm of Symptoms.
- 3) **DISSECTING AORTIC ANEURYSM**

Tear in intima of Aorta → B.l. bursts into media of Aorta → Dissection (Thick Wall / Narrow lumen)

→ Obstruction of Aortic br → ischaemia → UN-EQUAL pulse volume.

→ Damage of the Aortic Valve → AI

- **CL/P:** Old male + UN-CONTROLLED HTN ⇒ ACUTE CHEST PAIN + Shock
(Radiating to back)

- **O/E:**

- 1) **UN-EQUAL pulse volume.** (dt obst. Of Aortic br. Openings)
- 2) **AI ⇒ Early diastolic MURMUR.** (dt widening of the Aortic root)

- **Etiology** ⇒ HTN + Atherosclerosis + Collagen D.

- **INVEST.** ⇒ CT SCAN / MRI. "DIAGNOSTIC" + Echo "TRANS-OESOPH"

- **III.** ⇒ Control BP + SURGERY & Graft.

DD.. ACUTE Chest pain + Shock:

- 1) TENSION PNEUMO-THX.
- 2) EXTENSIVE MI.
- 3) MASSIVE pulm. Embolism.
- 4) DISSECTING Aortic An.

MYOCARDITIS

Etiology:

- 1) **Viral:** Cocksakie. Influenza. (Myocarditis occur several wks after viral infection)
- 2) SLE, RA.
- 3) Rheumatic fever.
- 4) Sarcoidosis.

CL/P OF HF.

- 1) Inappropriate Tachycardia + Muffling of H.S.
- 2) Manifestations of the cause.

INVEST.:

- 1) ECG & Echo.
- 2) of the cause e.g viral serology.
- 3) **↑Troponine and cardiac enzymes.**

HF + STEROIDS?!

- 1) SLE.
- 2) Rh. FEVER.

TREATMENT: of HF + STEROIDS?!! (Viral)

LA Myxoma

| | |
|------------------|---|
| ➤ Def. | Benign Tumor from the IAS encroaching the LA. (M/C 1 st tumor of heart) |
| ➤ CL/P | <ul style="list-style-type: none"> • young female + positional syncope: (as the pedunculated tumor obstructs the valve orifice) • Tumor Emboli → hemi-plegia. • Intermittent MS (rumbling) → disappears on lying on lt. side. |
| ➤ INVEST. | Echo - ↑ESR |
| ➤ TTT | Resection. |

MITRAL VALVE PROLAPSE = (Click MURMUR \$)

➤ **DEGENERATIVE MVD in cusps (MYXOMATOUS)**

- Prolapse of MV cusps into LA (mostly post. leaflet)
- abnormal V. contractions, papillary ms. strain ± MI

➤ **CAUSES:** UNKNOWN ± **MARFAN'S \$** AND **Thyro-toxicosis**

➤ **CL/P:** **YOUNG FEMALE + palpitation + Atypical Chest pain.** "dt papillary ms. strain from MV prolapsed"

DIAGNOSIS: **Early Ejection systolic click** + **Late systolic murmur** + **Echo.** (dt ballooning of cusps into LA) (not pan-systolic)

➤ **TREATMENT:**

- ββ (prophylaxis against arrhythmia & chest pain).
- Prophylaxis against IEC in significant M.I.
- VR for severe MI.

YOUNG FEMALE + palpitations **+ Atypical Chest pain**

- MV prolapse.
- Thyrotoxicosis – ANEMIA.
- CARDIAC NEUROSIS.

NB = ALL MURMURS:

- ↓ ON Standing EXCEPT HOCM & MV Prolapse.
- ↑ by EXERCISE EXCEPT HOCM

p. 102 CAUSES of hyper-dynamic Circulation

- | | |
|---------------------------------|------------------------|
| 1) ANEMIA | 5) BERI-BERI. |
| 2) THYROTOXICOSIS. | 6) PREGNANCY. |
| 3) 3 SHUNTS = (ASD / VSD / PDA) | 7) DRUGS = Nifedipine. |
| 4) LCF → VD. | 8) FEVER. |

p. 104 hyper-TENSIVE Child

- 1) GN.
- 2) COARCTATION.

p. 105 CYANOSIS SINCE BIRTH.

- 1) TGA.
- 2) EbSTEIN ANOMALY → CONG. TI → CYANO-ICTRUS.
- 3) TOTAL ANOMALOUS.
- 4) F4 ⇒ AFTER 6 wks.

p. 106 EbSTEIN ANOMALY

- 1) RA ++. **(HUGE RA)**
- 2) CONG. TI → CYANO-ICTRUS.
- 3) ± ASD
- 4) **CENTRAL CYANOSIS** dt SHUNTING of bl. THROUGH ASD. (REVERSED SHUNT)

p. 125 1ry Hyper-lipidemia = FAMILIAL hyper-CHOLESTEROLEMIA

- AD.
- XANTHOMAS - XANTHELMAS.
- IRIS... "ARCUS SENILIS"

4 SIGNS of LVF:

- 1) PULSUS ALTERNANS.
- 2) S3.
- 3) Bilat. FINE BASAL CREPITATIONS.
- 4) SHIFTED APEX.

Fundus Examination

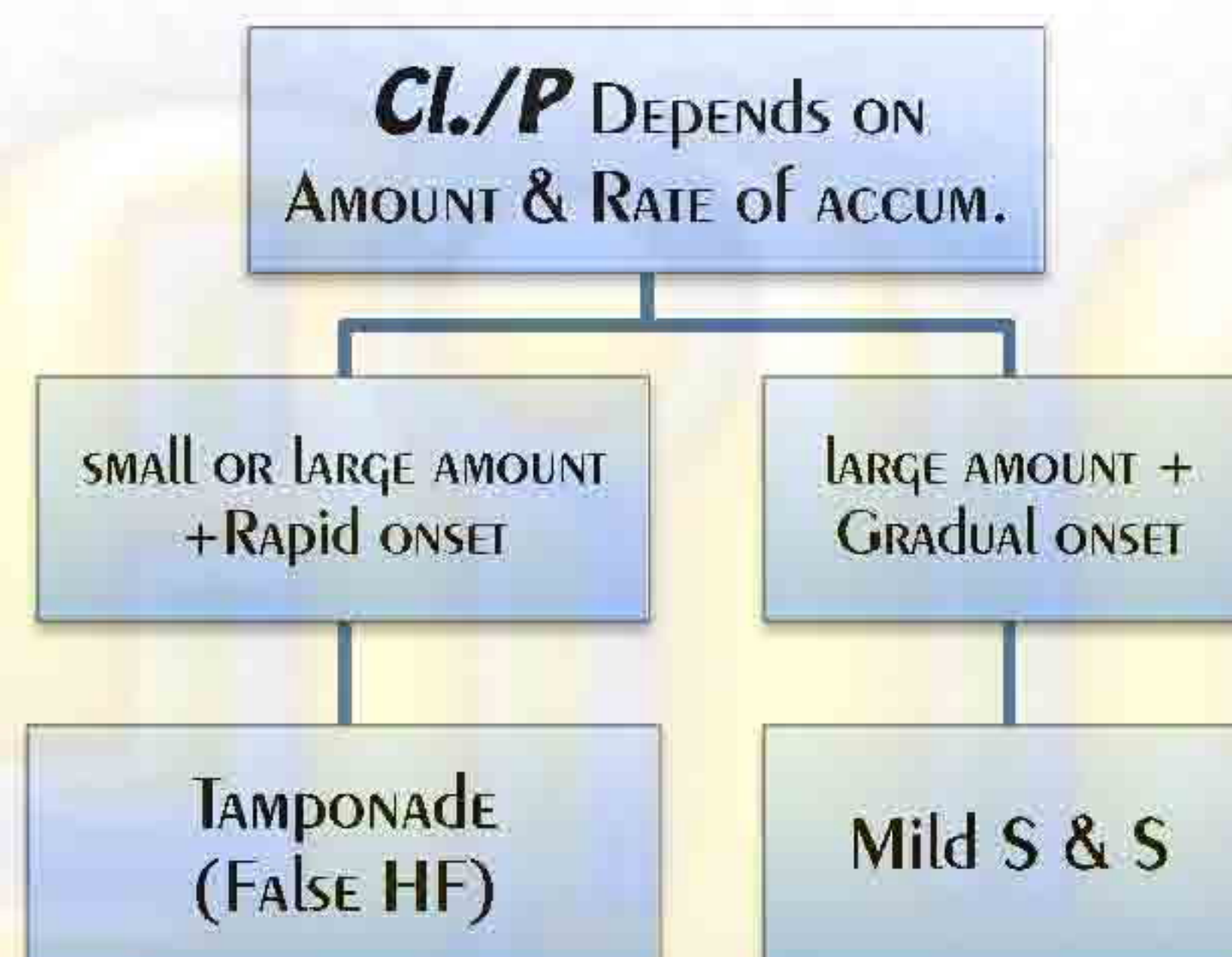
- | | |
|----------------------------|---|
| 1) BENIGN HTN | → SILVERY WIRE. |
| 2) MALIGNANT HTN | → MACULAR STAR + PAPILLOEDEMA. |
| 3) DM | → RETINOPATHY + VIT. HGE. |
| 4) Miliary TB | → CHOROIDAL TUBERCLES |
| 5) IEC | → Roth's Spot. |
| 6) POLYCYTHEMIA RUBRA VERA | → ENGORGED RETINAL V. |
| 7) <u>PAPILLOEDEMA</u> | BRAIN TUMOR / PSEUDO-TUMOR. CST / CO ₂ RETENTION. |
| 8) <u>PAPILLITIS</u> | <u>ON. (ISOLATED OR / PART OF MS)</u> |

Important Notes in Cardiology

PERICARDIAL EFFUSION

CAUSES:

- 1) **Bloody** → **TRAUMA** → **RUPTURE ANEURYSM of AORTA.**
- 2) **Hqic** → **MALIGNANCY – TB – CRF.**
- 3) **EXUDATE** → **TB – Malign – VIRAL.**
- 4) **TRANSUDATE** → **PART of G. edema (Nephrotic S)**
- 5) **Chylous** → **fluid is milky white rich in FAT.**



DD OF PERICARDIAL EFFUSION

DD OF PERICARDIAL EFFUSION

| | HEART FAILURE | PERICARDIAL EFFUSION |
|--------------|--|--|
| CL/P | <ul style="list-style-type: none"> • ↓ COP. • LVF → PVC. • RVF → SVC • NO Ascitis. | RETRO-STERNAL OPRESSION + COMPRESSION ON <ul style="list-style-type: none"> • LV → ↓ COP. • LA → PVC → <i>Dyspnea – Orthopnea</i> • RA → SVC → <i>Neck veins.</i> • PRAYER position → <i>shift of fluids away from pulm. V. & LA → ↓ PVC.</i> |
| ➤ NECK VEINS | ✓ CONGESTED. (↓ E Inspiration dt (-) VE INTRA-THORACIC PR.) | ✓ INSPIRATORY FILLING. (KAUSSMULL'S SIGN) |
| ➤ PULSE | ✓ PULSUS ALTERNANS | ✓ PULSES PARADOXES. |
| ➤ HS | ✓ S ₃ Gallop. | ✓ DISTANT HS. |
| ➤ MURMUR | ✓ MI / TI dt DILATED HF | ✓ NO MURMUR. |
| | | PERCUSSION <ul style="list-style-type: none"> • dullness OUTSIDE THE APEX • ↑↑ BARE AREA. • EWART'S SIGN = Lt. intra-capsular dullness dt comp. of the Lt. lung → left basal collapse |
| TMT. | | |
| | 4 Ds <ol style="list-style-type: none"> 1) DOPAMINE. DOBUTAMINE. 2) DIGITALIS. 3) DIURETICS. 4) DILATORS. | <ol style="list-style-type: none"> 1) PERICARDIO-CENTESIS. "EMERGENCY" 2) PERICARDIAL WINDOW. 3) PERICARDIECTOMY. 4) STEROIDS TO ⊖ ADHESIONS. |

INVESTIGATIONS

- 1) X-RAY → *flask shaped heart.*
- 2) Echo → *"best" + Determine severity.*
- 3) ECG → *↓↓ voltage of QRS < 5 mm.*
- 4) PERICARDIOCENTESIS → *Diagnostic & Therapeutic.*

PERICARDIAL EFFUSION:

- 1) DYSPNEA – ORTHOPNEA.
- 2) NECK VEINS.
- 3) PULSUS PARADOXUS.

"SVC Obst. is more common in Constrictive pericarditis"

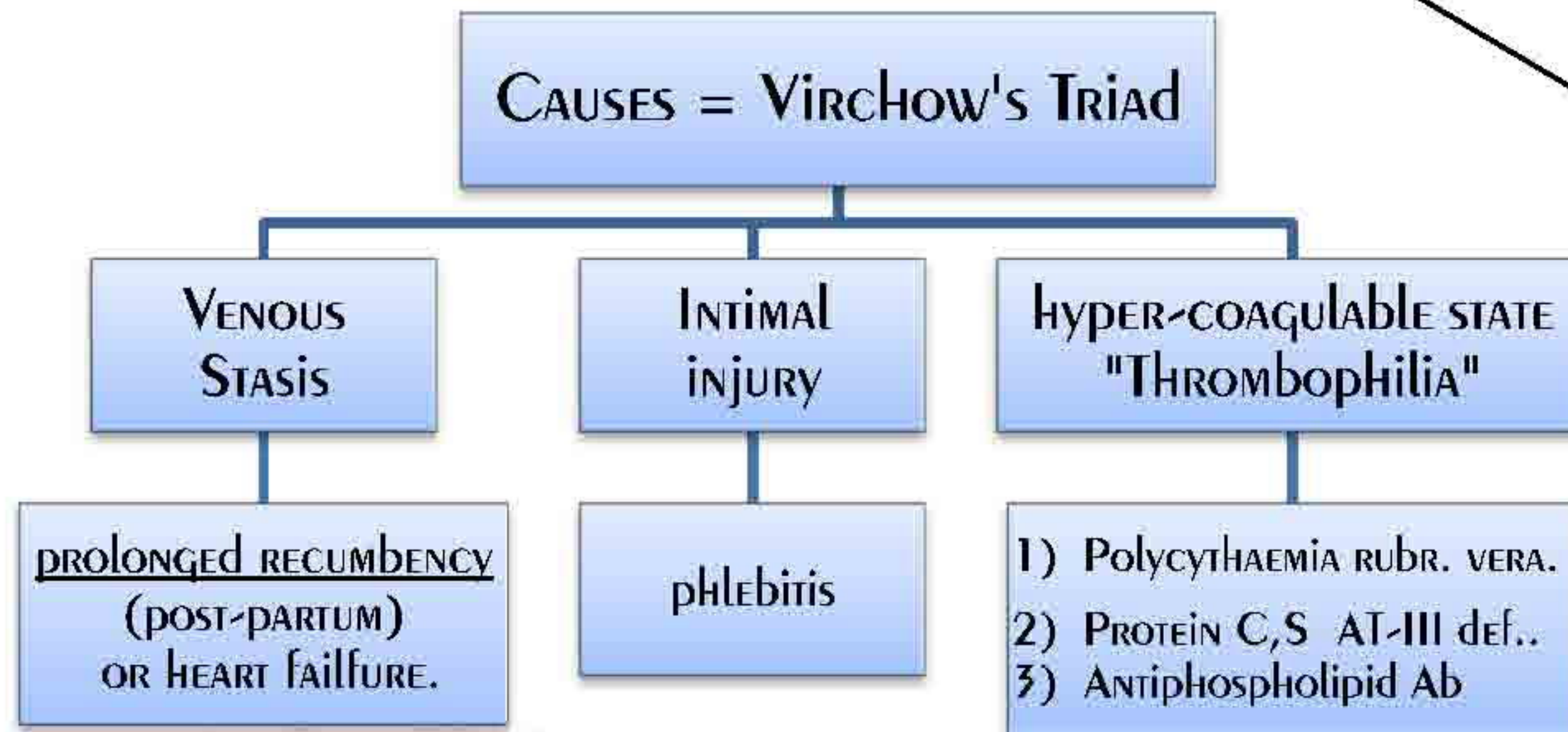
PERICARDITIS

| | ACUTE PERICARDITIS | CONSTRICTIVE PERICARDITIS | ADHESIVE PERICARDITIS |
|---------------|--|--|--|
| CAUSES | <ol style="list-style-type: none"> Viral: (M/C & Relapsing pericarditis) <ul style="list-style-type: none"> Cocci - Echo Influenza Measles - Mumps TB. MALIGNANT. (BREAST / LUNG) PURULENT: Collagen D. UREMIA. Rh.F. & M. INFRACTION | <p>ADHERENCE of 2 layers of pericardium INTERFERING with the MECHANICS of TTT.</p> <ol style="list-style-type: none"> TB - VIRAL. Rh.D - PURULENT. HAEMOPERICARDIUM. | <p>ADHESIONS bet. THE 2 layers & THE SURROUNDING STRUCTURES in MEDIASTINUM.</p> <ul style="list-style-type: none"> RHEUMATIC FEVER |
| ➤ CL/P | | | |
| | <ol style="list-style-type: none"> OF THE CAUSE. Flu-like symptoms → Sudden Chest Pain (dr Viral Infection) <ul style="list-style-type: none"> Scratching Retro-sternal radiating to shoulders & neck ↑ by inspiration - mov. - swallowing Pericardial rub. | <p>CL/P as effusion but....</p> <ol style="list-style-type: none"> Dyspnea - Orthopnea Neck veins. (inspiratory filling - Kussmaul's Sign) Pulsus paradoxus. (inspiratory ↓ in BP > 20 mmHg / As Acute Severe Asthma) AF. (↓ v. filling → ↑ LA pr. → LA dilatation → AF) Pericardial knock = 3rd HS. (early diastolic filling) Ascites precoc. (linking of liver → as liver congested → ascites b4 LL edema) | <ol style="list-style-type: none"> Associated valve lesions. Fixed Apex + Systolic intercostal retraction → Broad bent's sign = No rotary mov. Of the ventricles As Constrictive pericarditis. |
| INVEST | <ul style="list-style-type: none"> ECG → ↑↑ST segment (Transient MI - Vaso-spastic Angina / Acute pericarditis) ↑ CK if ASS. E Myocarditis. INVERTED T. | <ul style="list-style-type: none"> X-ray → small sized heart + Ca of pericardium ECG → ↓ Voltage as pericardial eff. CT scan OR MRI → pericardial Ca⁺⁺ | <ul style="list-style-type: none"> Fluoroscopy = Dynamic X-ray (linking of oesoph. with cardiac beat) |
| TTT. | <ol style="list-style-type: none"> OF THE CAUSE. NSAIDs. (Indomethacin 25mg / 8hrs) STERIODS ?! (Viral) <ul style="list-style-type: none"> # Anti-Coagulants → HEMOPERICARDIUM. | <p>Anti TB & pericardiectomy. (DD = Restrictive Cardiomyopathy)</p> | <p>of the cause + surgery</p> |

CARDIOMYOPATHY = DIAGNOSIS OF EXCLUSION

| | Dilated CM (Bi-Ventricular Failure) | HOCM | Restrictive CM (Diastolic failure) |
|------------------|---|--|--|
| CAUSES | <ol style="list-style-type: none"> 1) Alcohol – Myopathy. 2) ↓ Selenium. 3) Haemochromatosis. 4) Cyclo-phosphamid. 5) F ATAXIA 6) SLE – polymyositis. 7) Idiopathic. | <p>AD ↑↑ Thickness of IVS.</p> <p>↓</p> <p>ENCROACH THE AORTIC OPENING</p> <p>↓</p> <p>AS due to LV outflow obst.</p> <p>= Diastolic dysfunction ± ML</p> | <ol style="list-style-type: none"> 1) Amyloidosis 2) Haemochromatosis. 3) Sarcoidosis <p>} OSIS</p> |
| CL/P | <p><u>Bi-Ventricular failure:</u></p> <ul style="list-style-type: none"> • Systolic dysf. • ± AF dt LA dilatation. | <p>Sudden death in Young Age with +ve FH (During, or just after vigorous exertion)</p> <p><u>Criteria:</u></p> <ul style="list-style-type: none"> • AS (sub-valvular) • Diastolic Dysf. • ML | <p><u>Of Constrictive pericarditis.</u></p> <ul style="list-style-type: none"> • Diastolic dysf. → ↑EDP → Atrial contr. • 4th HS. (3rd HS is Constrict. peric.) • AF dt ↑ LA pr. |
| INVEST | <p>Echo – X-ray – ECG</p> <p><u>Reversible Dilated CM:</u> (Alcohol / Post-partum – Selenium / Hypo-thyroidism)</p> | <ol style="list-style-type: none"> 1) Echo. 2) <u>Murmurs of HOCM:</u> AS → ESM with the base <ul style="list-style-type: none"> • ↑ by Valsalva dt ↓ VR → ↓ heart dilat → ↑ obst → ↑ murmur • ↓ by Squatting dt ↑ VR → ↑ heart dilat → ↓ Obst → ↓ murmur. 3) ECG → deep Q wave. | <p>NB (MCQ) = All Murmurs!</p> <ul style="list-style-type: none"> • ↓ + Valsalva & Standing except HOCM & MV Prolapse • ↑ by exercise except HOCM |
| TREATMENT | <p><u>AS HF = 4 Ds:</u></p> <ol style="list-style-type: none"> 1) Diuretics. 2) Dilators. 3) Digitalis if AF. | <p><u>Avoid Vigorous Exertion:</u></p> <ol style="list-style-type: none"> 1) ββ + Verapamil → ↓↓ outflow obst. 2) Arrhythmia → Amiodarone. # VD → ↑ outflow obst. # Digitalis is → ↑↑ outflow obst. <p>➤ Myomectomy → ↓↓ thickness of septum.</p> | <p><u>يُحَرَجُ الْوَجْهَ</u></p> <ol style="list-style-type: none"> 1) ββ + Verapamil. 2) Heart transplant if Amyloidosis. |

DVT



DD of DVT (TENDER CALF MS)

- 1) DVT
- 2) Cellulitis
- 3) RUPTURE PLANTARIS.
- 4) PERIPH NEURITIS.
- 5) OSTEOMYELITIS.

DVT in LL (Ilio-femoral VEIN)

- 1) LL EDEMA. (UNILATERAL)
- 2) TENDER CALF MS.
- 3) TENDERNESS ALONG THE COURSE OF FEMORAL V.
- 4) +VE HOMAN'S SIGN → PAIN IN CALF MS. ON DORSI-FLEXION OF FOOT.

Thrombophilia

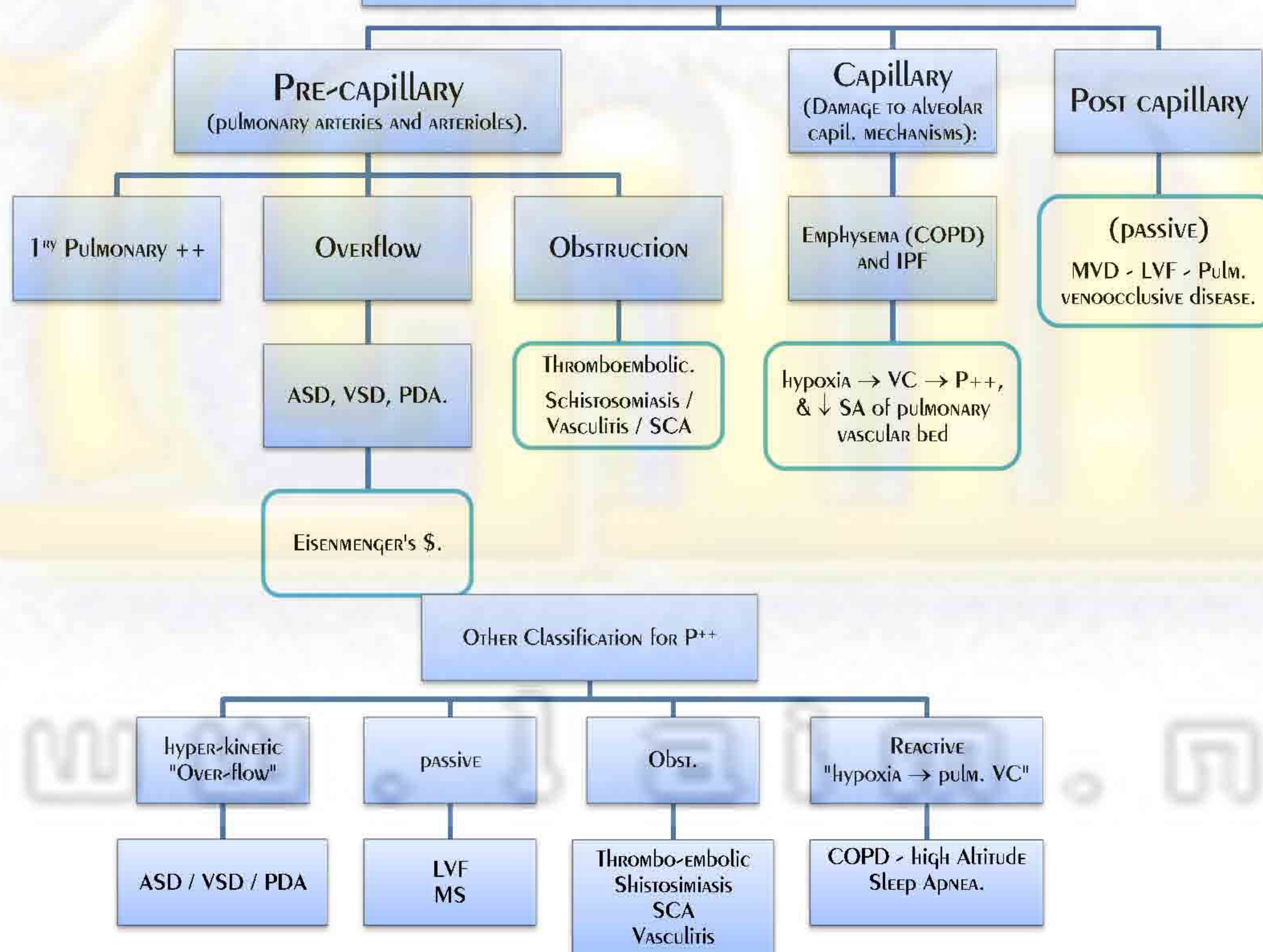
- YOUNG AGE.
- RECURRENT DVT + ARTERIAL THROMBOSIS.
- THROMBOSIS IN SPECIFIC SITES. (BUDD CHIARI S)

INVESTIGATIONS Duplex SCAN + FOR THROMBOPHILIA.

OTHER SITES OF DVT

| SITE of DVT | CAUSE | CL/P |
|---------------------------|--|--|
| 1) PORTAL VEIN THR. | | PH → EV / SPLENOmegaly / ASCITES |
| 2) RENAL VEIN THROMBOSIS | 1) MEMBR. GN. (M/C) 2) Dehydration. 3) Blood Disease | 1) LOIN PAIN & TENDERNESS. 2) RAPID DETERIORATION of KID FUNCTION. 3) PROTEINURIA. (dt ↑ RENAL PR.) <i>"Nephrotic S" → RV thrombosis</i> <i>→ Acute severe deterioration + loin pain</i> |
| 3) IVC THROMBOSIS | 1) Typhoid. 2) Behcet's. | 1) LL EDEMA. (BILATERAL) 2) ASCITES. 3) COLLATERALS ON ABDOMINAL WALL. |
| 4) SVC THROMBOSIS | CAUSES of SVC Obst.: 1) Constrictive P. 2) Mediastinal mass 3) SVC Thrombosis. | 1) FACIAL EDEMA + PERIPH. CYANOSIS IN TONGUE dt venous stag. 2) CONGESTED NON-PULSATING NECK. V. 3) CHEST COLLATERALS. Directed from above downward. |
| 5) AXILLARY V. THROMBOSIS | | • EDEMA of the ARM. • TENDERNESS. ALONG THE COURSE of Axillary V. |

PULMONARY HYPERTENSION



PULMONARY EMBOLISM

SOURCES of Pulm Embolism

- 1) DVT in LL.
- 2) IEC of Rt. side.
- 3) FAT - AMNIOTIC fluid - Air

CL./P

(ACCOERDING TO THE SIZE of Emboli)

SMALL EMBOLI

NO SYMPTOMS but if...
RECURRENT SHOWERS of Emboli
obliterating >2/3 of vas. bed

Thrombo- Embolic P++
(Cough / Dyspnea / Discomfort)

RVF

(sub-ACUTE
COR pulmmonal)

MODERATE EMBOLI

PULM INFARCTION
if HEMODYNAMICS of the lung
ARE DISTURBED (COPD/ PVC)

- 1) Dry Cough & hemoptysis.
 - 2) Dyspnea.
 - 3) Chestpain, "pleuritic"
 - 4) fever. "low grade dt T. damage → ↑TLC"
- ± CREPITATIONS

Till INVEST.
"It may be"

Pulm. Embolism &
INFARCTION

Anti-Coagulants
if No #

PNEUMONIA

ABS

MASS EMBOLISM

Pulm. Embolism
"Obst. of pulm. ARTERY"

ACUTE Chest Pain + Shock (DD)

(Shock dt ↓ bl. flow to lung → ↓ VR to LA → ↓COP)
(Chest pain dt Rapid distention of PA against RV)

- 2) CYANOSIS = hypoxia.
- 3) ACUTE RVF.

INVEST.

X-Ray

- 1) Normal.
- 2) Infarction = wedge shaped opacity.
- 3) pl. effusion. ± PE.
- 5) Dilated PA.

Pulm ANGIO
"DIAGNOSTIC
but INVASIVE"

**Spiral CT
Angio +
IV CONTRAST**

Blood

↑ ESR / ↑ TLC
(hypoxia in
MASSIVE
Embolism)

LUNG SCAN

"Easy / Rapid / Cheap"

VENTILATION SCAN

Pt. INSPIRES
(XENON)

DETECTIVE
distribution in
lung.

PERFUSION SCAN

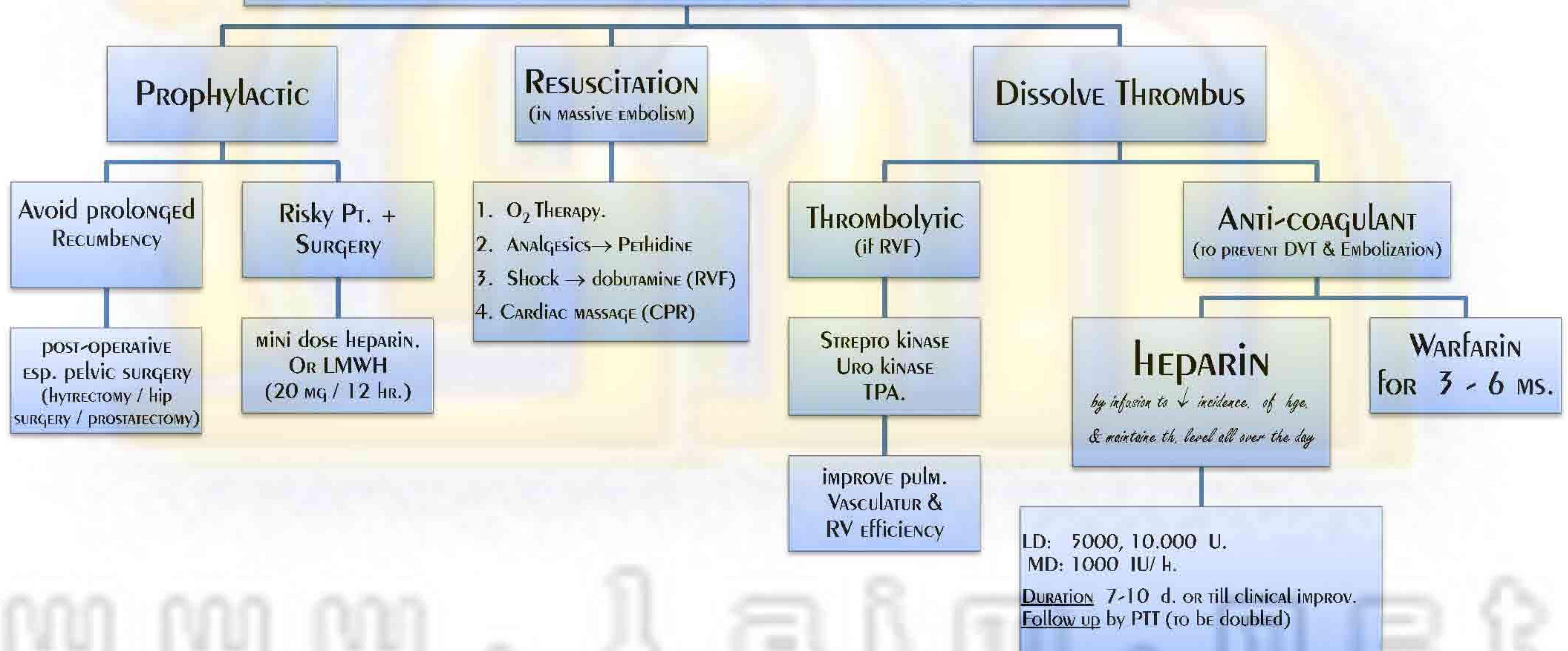
IV INJECTION of
RA (Tc)

DETECTIVE
Uptake by pulm.
ARTERIES

NB:

- pulm. Embolism → NORMAL VENTILATION + Abnormal perfusion.
- pulm fibrosis → Abnormal VENTILATION & perfusion scan.

TTT of *PULM. EMBOLISM* & DVT



HYPER-LIPIDEMIA

| 1 ^{RY} HYPER-LIPIDEMIA | | | | | 2 ^{RY} HYPER-LIPIDEMIA |
|---------------------------------|--------------------------|--------------------|-----------------|--|--|
| | TYPE | INCREASED | ↑BLOOD LEVELS | DEFECT | |
| I | HYPER-CHYLOMICRONEMIA | Chylomicrons | TG, Cholesterol | Lipoprotein | 1) Endocrinal: • DM → ↑TG • Hypo-Thyroidism → ↑Cholesterol. 2) Renal: • Nephrotic S → ↑ LDL & Cholesterol. • CRF → ↑TG. 3) STORAGE D → Glycogen SD. – GAUCHER'S D. 4) Drugs. • ββ (NS) → ↑TG • Thiazides → ↑TG. • Alcohol → ↑TG • Steroids – OCP – Obesity. |
| IIa | HYPER-CHOLESTEROLEMIA | LDL | Cholesterol | ↓ LDL Receptors | |
| IIb | COMBINED HYPER-LIPIDEMIA | LDL, VLDL | TG, Cholesterol | ↑ hepatic production of VLDL | |
| III | DYS β-LIPO-PROTEINEMIA | IDL, VLDL | TG, Cholesterol | Altered Apo-lipoprotein E | |
| IV | HYPER-TG EMIA | VLDL | TG | ↑ hepatic production | |
| V | MIXED HYPER-TG EMIA | VLDL, Chylomicrons | TG, Cholesterol | ↑ production / ↓ Clearance of VLDL & Chylomicrons. | |

DRUGS THERAPY OF HYPER-LIPIDEMIA

- ↑LDL → A.s. + ISHD.
- ↑TG → pancreatitis.
- STATINS & FIBRATES ARE UNSAFE TO BE USED TOGETHER → Rhabdomyolysis → ARF.

| | | |
|-------------------|--|-------------|
| 1) FIBRATES | FENOFIBRATE. (LIPANTHYL) 300 MG/D | ↓TG - ↑HDL. |
| 2) STATINS | SIMVASTATIN. (ZOCOR)..... ATROVA-STATIN. (LIPITOR) 10-80 MG/D. | ↓LDL. |
| 3) RESINS | | ↓LDL. |
| 4) NICOTINIC ACID | | ↓TG - ↑HDL. |
| 5) OMEGA 3 | | ↓TG - ↑HDL. |